PROCEEDINGS

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The Committee on Publications declares that each paper of this volume was distributed on the date indicated on its initial page. The Index, title page, and minutes of meetings for 1922 (pp. i–xiv; 231–235) were issued on March 28, 1923.

ERRATA

Page 78, for *sanctidiegi* read **sanctidiegi.**
Page 120, line 3 from bottom, for *Disteribma* read *Disterigma.*
Page 226, for Phallatanga read Pallatanga.

Vol. 35, pp. ix-xiv

PROCEEDINGS
OF THE
BIOLOGICAL SOCIETY OF WASHINGTON

PROCEEDINGS.

The Society meets from October to May, on alternate Saturdays, at 8 P. M. All meetings during 1922 were held in the new lecture hall of the Cosmos Club, except no. 632, held in the auditorium of the National Museum, and the special meeting of September 29, held in the auditorium of the Interior Department.

January 4, 1922—632d Meeting.[1]

President V. Bailey in the chair; 176 persons present.

Formal communication: A. S. Pillsbury,[2] Wild flowers and birds of Yosemite National Park.

January 21, 1922—633d Meeting.[3]

President Bailey in the chair; 86 persons present.

President Bailey announced the membership of the Committee on Communications as follows: S. A. Rohwer, Chairman, and C. E. Chambliss, R. E. Coker, H. H. T. Jackson.

New members elected: A. H. Fisher, Miss Lucy Howard, H. F. Prytherch, H. M. Vars.

Informal communications: R. W. Shufeldt, Exhibition of a new biography of Alfred Newton; I. N. Hoffmann, Exhibition of *Attacus edwardsii;* E. A. Goldman, Meeting of the Boston Bird-banding Society; R. W. Williams, Roosting of starlings near the Cosmos Club.

Formal communications: S. F. Hildebrand, Fish in relation to mosquito control; H. L. Shantz, Notes on the "white ants" of Africa; C. D. Marsh, Livestock poisoning by death camas.

[1] Abstract in Journ. Washington Acad. Sci., vol. 12, p. 296, June 19, 1922.
[2] Introduced by S. T. Mather.
[3] Abstract in Journ. Washington Acad. Sci., vol. 12, p. 296–297, June 19, 1922.

February 4, 1922—634th Meeting.[1]

President Bailey in the chair; 55 persons present.

Informal communications: L. O. Howard, Botfly larvae attached to a tapeworm in the stomach of a zebra; R. W. Shufeldt, The Asiatic mantis, *Tenodera sinensis*, in Washington; T. S. Palmer, Census of quail in D. C.; V. Bailey, Occurrence of buffalo bones in Malheur County, Oregon.

Formal communications: Smith Riley, The Nation's game supply; A. H. Howell, The relationship and distribution of American chipmunks.

February 18, 1922—635th Meeting.[2]

Vice-President H. C. Oberholser in the chair; 101 persons present.

Informal communications: P. Bartsch, A Brazilian cardinal in Washington; T. S. Palmer, Notes on a recently completed check list of the birds of Africa, and on a cooperative plan for similar lists for other regions.

Formal communication: R. M. Yerkes, The behavior of monkeys and apes.

March 4, 1922—636th Meeting.[3]

President Bailey in the chair; 64 persons present.

New member elected: L. M. Huey.

Informal communications: T. S. Palmer, A gift of $200,000 to the National Audubon Society, and on a decision of the State of New Jersey that the bobolink is a non-insectivorous bird, also reading of a letter from W. B. Alexander; L. O. Howard, Recent meeting of the New Jersey Mosquito Extermination Association; J. M. Aldrich, Notes on the genus *Palpostoma;* L. D. Miner, Spring bird study classes of the Audubon Society; H. C. Oberholser, Tameness of birds due to heavy snows; V. Bailey, Tubers of *Talinum angustissimum* eaten by rodents in Arizona.

Formal communications: V. Bailey, Raising baby beavers; A. S. Hitchcock, Botanical notes from the Orient.

[1]Abstract in Journ. Washington Acad. Sci., vol. 12, p. 298, June 19, 1922.
[2]Abstract in Journ. Washington Acad. Sci., vol. 12, p. 313, July 19, 1922.
[3]Abstract in Journ. Washington Acad. Sci., vol. 12, p. 313–315, July 19, 1922.

March 18, 1922—637th Meeting.[1]

President Bailey in the chair; 62 persons present.

Informal communications: H. M. Smith, Exhibition of a large rock lobster from Florida, and exhibition of a map of Iceland published in 1606; N. Hollister, Arrival of a giant anteater at the Zoological Park; T. S. Palmer, Several birds recently introduced into the United States; H. C. Oberholser, Wintering of wild ducks in Iowa, and importation of the starling into Vancouver Island; A. S. Hitchcock, On the membership campaign.

Formal communications: Paul Bartsch, American shipworms; Ivar Tidestrom, The floral alphabet of the Celts.

April 1, 1922—638th Meeting.[2]

President Bailey in the chair; 69 persons present.

New members elected: H. H. Barlow, L. C. Drake, F. G. Grimes, Smith Riley, J. R. Schramm.

Informal communications: R. W. Shufeldt, On methods in photography, and exhibition of "Nature Land," a new English magazine; W. J. Holland, Remarks on the collection of fossil dinosaurs.

Formal communication: P. L. Ricker, Wild flowers that need protection.

April 15, 1922—639th Meeting.[3]

President Bailey in the chair; 64 persons present.

New members elected: Roberto Dabbene, W. A. Dayton, G. C. Hedgcock, Ernest Knaebel, J. P. Norris, Jr., Wilson Popenoe, P. G. Russell, Alden Sampson, J. H. Walton.

Formal communications: R. P. Cowles, A hydrographic and biological survey of Chesapeake Bay; R. W. Shufeldt, Observations on the fauna and flora of the District of Columbia.

April 29, 1922—640th Meeting.[4]

President Bailey in the chair; 67 persons present.

New members elected: Miss Mary Bradley, Miss Grace Holmes, H. B. Humphrey, L. M. Hutchins, F. E. Kempton, Mrs. Theodore Knappen.

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[1] Abstract in Journ. Washington Acad. Sci., vol. 12, p. 315–316, July 19, 1922.
[2] Abstract in Journ. Washington Acad. Sci., vol. 12, p. 316–317, July 19, 1922.
[3] Abstract in Journ. Washington Acad. Sci., vol. 12, p. 317–318, July 19, 1922.
[4] Abstract in Journ. Washington Acad. Sci., vol. 12, p. 318–319, July 19, 1922.

Formal communication: W. E. Ritter, The usefulness and the peril of the laboratory method in biology.

May 13, 1922—641st Meeting.[1]

President Bailey in the chair; 74 persons present.

New member elected: M. N. Pope.

Informal communications: David White, Exhibition of a fossil frog or toad; J. M. Aldrich, Note on the occurrence of dipterous larvae in shales of Green River, Utah; Miss P. L. Boone, Report of a visit to C. T. Simpson; A. Wetmore, Unusual bird songs; V. Bailey, Exhibition of pet rodents; L. O. Howard, A mouse plague in Italy since the war; E. A. Goldman, A mouse plague in France.

Formal communication: T. S. Palmer, Twenty years of Federal protection of the buffalo.

September 29, 1922—Special Meeting.[2]

President Bailey in the chair; 240 persons present.

Formal communication: D. R. Dickey, Exhibition of moving pictures of game animals of New Brunswick.

October 19, 1922—Special Meeting.[2]

Joint meeting with the Washington Academy of Sciences and the Chemical Society of Washington. President W. J. Humphreys of the Washington Academy of Sciences in the chair, and 94 persons present.

Program: Dr. H. J. Hamburger, Professor of Physiology in the University of Groeningen, Holland, The increasing significance of chemistry in medical thought and practice.

November 11, 1922—642d Meeting.[2]

President Bailey in the chair; 75 persons present.

Formal communications: E. D. Ball, Importance of adequate training for biological work in government service; G. N. Collins, Maize and its wild relatives; N. A. Cobb, Nematodes inhabiting trees.

November 25, 1922—643d Meeting.[2]

Vice-President A. S. Hitchcock in the chair; 76 persons present.

[1]Abstract in Journ. Washington Acad. Sci., vol. 12, p. 333–335, August 19, 1922.

[2]Abstract to appear in Journ. Washington Acad. Sci.

New members elected: J. C. Bridwell, S. C. Brooks, E. F. Fribley, L. G. Hoover, P. B. Johnson, Edmund Platt.

Informal communication: L. W. Stephenson, Discovery of cypress stumps in excavation for the new Hotel Walker on Connecticut Avenue.

Formal communications: L. O. Howard, Some informalities about pioneer workers in medical entomology; C. W. Stiles, Frequency of Amoeba in man and its significance in public health.

December 9, 1922—644th Meeting.[1]

FORTY-THIRD ANNUAL MEETING.

President Bailey in the chair.

The following 53 persons were elected to membership: Joseph Becker, Norwell Belt, R. A. Bogley, Jr., D. L. Brown, C. H. Calvin, Billie Cass, R. G. Congdon, A. D. Daughton, P. V. De Leon, W. S. Detwiler, E. F. Ducey, J. V. Flanagan, M. C. Flohr, H. D. Freiger, J. L. Fretz, Charles Geschickter, H. A. Gilbert, L. S. Gordon, Anne Hof, N. S. Hubert, J. R. B. Hutchinson, M. A. Johnson, T. J. Kelly, Rose E. Kundahl, W. H. Lawton, P. Mahoney, A. D. Marks, G. A. McLain, J. E. McLain, E. C. Myers, M. A. Noriega de Sabla, J. L. O'Connor, R. C. Orrison, K. J. Osterhout, Herndon Phillips, Edmund Pope, Mary E. Quick, Dr. J. W. Roberts, F. G. Riley, Jr., H. E. Rooney, Ignatius Rutkoski, Benjamin Seiler, W. W. Spurgeon, James Stewart, T. D. Stewart, F. E. Stuart, Elizabeth V. Waddley, E. E. Walter, Ida Weckerly, F. R. Weedon, Avis M. Withers, A. A. Zapolsky, and E. E. Ziegler.

Reports were received from the Recording and Corresponding Secretaries and the Committee on Publications.

The following officers and members of the Council were elected:

President, A. S. Hitchcock.

Vice-Presidents: J. W. Gidley, S. A. Rohwer, H. C. Oberholser, E. A. Goldman.

Recording Secretary, S. F. Blake.

Corresponding Secretary, T. E. Snyder.

Treasurer, F. C. Lincoln.

[1]Abstract to appear in Journ. Washington Acad. Sci.

Members of the Council, C. E. Chambliss, H. C. Fuller, H. H. T. Jackson, W. R. Maxon, A. Wetmore.

The President announced the membership of the Committee on Publications as follows: C. W. Richmond, J. H. Riley, T. E. Snyder, F. C. Lincoln.

President Hitchcock was nominated for one of the Vice-Presidents of the Washington Academy of Sciences.

Informal communication: C. W. Stiles, Appointment of a Committee on Zoological Nomenclature to represent the Society in cooperation with the International Commission on Zoological Nomenclature.

Vol. 35, pp. 1–4 March 20, 1922

PROCEEDINGS
OF THE
BIOLOGICAL SOCIETY OF WASHINGTON

FOOD HABITS OF CROTAPHYTUS WISLIZENII BAIRD AND GIRARD.

BY HERBERT J. PACK.

The results of an examination of stomach contents of the leopard lizard, *Crotaphytus wislizenii*, are presented in the accompanying table. These lizards were collected during the last days of May and the first half of June in 1920 and 1921. They were taken in various localities in Utah from the southern end of Great Salt Lake to St. George in the extreme Southwest, thus representing nearly the entire range of the lizards in the State.

A study of the table shows that this lizard is entirely insectivorous and carnivorous. Five of the eighteen had eaten other lizards—one a full-grown *Cnemidophorus tessellatus!* All of the others had taken insects. Of these, bees and wasps, lepidoptera, largely larvae, beetles, flies and grasshoppers were most frequently represented. The grains of sand found in five specimens were likely ingested accidentally in catching insects. It is significant that not a single specimen contained vegetable remains.

These results are in accord with the findings of Ruthven in New Mexico and Arizona[1] where he found insects and lizards, and in Nevada[2] where he found only insects. They agree also with Taylor's report[3] of finding a *Sceloporus graciosus* and seeing one chasing a cicada; with Richardson[4] who writes that "its food consists to some extent of other lizards, for a whole *Cnemidophorus tigris*, the tail of another, and a *Uta stansburiana* were found in the stomachs examined"; with Camp[5] who found a full-grown gridiron-tailed lizard; with Stejneger[6] in finding a full-grown *Uta stansburiana* in one specimen and a mature *Phrynosoma platyrhinos* and

[1] Am. Mus. Nat. History, Vol. 23, Art. 23, pp. 517–518.
[2] Occ. Papers, Mus. of Zoology, U. of Mich., No. 8, p. 17.
[3] U. of Calif. Pub. in Zoology, Vol. 7, pp. 347–348.
[4] U. S. Nat. Mus. Proc., Vol. 48, p. 408.
[5] U. of Calif. Pub. in Zoology, Vol. 12, No. 17, p. 522.
[6] N. A. Fauna, No. 7, p. 167.

remnants of *C. wislizenii* in another; and with Franklin[1] who reports that in the Painted Desert of Arizona *C. wislizenii* feeds largely upon cicadas. On one occasion he saw a specimen jump up over two feet and catch a cicada which was singing in a low greasewood bush. Merriam's statement[2] that the "leopard lizard is chiefly a vegetarian" is at variance with these results.

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[1]Copeia, Vol. 1, No. 5.
[2]N. A. Fauna, No. 7, p. 168.

STOMACH CONTENTS OF CROTAPHYTUS WISLIZENII BAIRD AND GIRARD

No.	*Sex*	*Lizards*	*Hymenoptera*	*Coleoptera*	*Lepidoptera*	*Orthoptera*	*Diptera*	*Miscellaneous Insects*	*Unid. Animal Remains*	*Spiders*	*Sand*	*Notes*
500	♀	1 mature *Uta stansburiana*										
501	♂	1 mature *Uta stansburiana*										
502	♂		6 (unid.)		1 larva	2 (unid.)	2 larva	2 (unid.)	x			
503	♀	1 mature *S. graciosus graciosus*										
504	♂		1 Sphecidae		2 larvae		2 (unid.)		x			
505	♂	1 mature *Uta stansburiana*										
506	♂					2 large Acrididae					1 grain	
507	♂					2 Acrididae					1 grain	
508	♀		4 bees (Apidae) 3 (unid.)	2 (unid.)	2 adults							
509	♀		2 Andrenidae	1 Cerambycidae	2 butterflies						1 grain	
510	♂		2 (unid.)	1 larva	2 larvae	1 Acrididae			x	1		
511	♂		2 (unid.)		2 larvae		1 Syrphidae 1 (unid.	1 Capsidae	x		1 grain	
512	♀						1 (unid.)	1 Cercopidae	x			
513	♀						1 (unid.)	1 larva (unid.)	x	1		Juvenile
514	♂				1 larva	2 Acrididae	1 (unid.)			2		
515	♂		2 Eumenidae 1 Cynipidae 2 small Ichneumonidae 4 (unid.)	1 Chrysomelid larva 2 Coccinellidae 2 (unid.)	1 larva		1 cicada			2	1 grain	
516	♀	1 mature *Cnemidophorus tessellatus*										
517	♀								x			Juvenile

Vol. 35, pp. 5–6 March 20, 1922

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A NEW SALAMANDER FROM MEXICO.

BY E. R. DUNN.

Last August, while Mr. Prescott Townsend and myself were collecting in the vicinity of Jalapa, we took five specimens of a small salamander which seems undescribed.

Oedipus townsendi, sp. nov.

Type: Mus. Comp. Zool. 8017, adult male, Aug. 20, 1921. E. R. Dunn and Prescott Townsend, collectors.

Type locality: Cerro de los Estropajos near Jalapa, Vera Cruz, Mexico.

Range: Known only from type locality and from Guerrero, in the state of Hidalgo.

Diagnosis: A small *Oedipus* with inner and outer toes rudimentary; nostrils large in adult; teeth on maxilla; vomerine series of six teeth, not extending beyond nares; four to five costal folds between appressed toes.

Description: Type, 13 costal grooves; 5 costal folds between appressed toes; head width 5 in length from snout to vent; head length 4¼ in length of body; head a blunt oval; eye longer than its distance from tip of snout; nostril very large, its diameter half that of pupil; snout swollen; outline of upper jaw straight as seen from side; angle of jaw back of hind angle of eye; both eyelids fitting under a fold of skin behind; a groove from eye to gular fold; a branch from this down behind angle of jaw; limbs weak; fingers 3, 2, 4, 1, in order of length, tips of third and second free, first and fourth completely in web; toes 3, 4, 2, 5, 1 in order of length, tips of third, fourth and second free, first and fifth completely in web; tail as long as head and body, constricted at base, circular in cross-section; anal lips lined with papillae. Vomerine series not continuous with parasphenoids, 6 teeth in series, beginning behind inner edge of nares, curving in and back to meet its fellow, from which it is separated by no more interval than exists between two teeth of the same series, separated from parasphenoids by its own length; latter in a single patch beginning at middle of eyesocket; teeth on maxilla to anterior edge of eyesocket; an enlarged tooth on premaxilla does not pierce lip. Dark greenish above; black below; blackish V-shaped markings, apex forward, on back and on upper surface of tail; an indistinct light line on each side of back, most prominent above inser-

tions of arms and legs; a light line across head between hind borders of eyelids; irregular white markings on sides between insertions of legs, and on sides and lower surface of tail; white dots on throat; limbs mottled black and gray.

Total length 42, head 4, body 17, tail 21 mm.

Variation: A male, Mus. Comp. Zool. 8018, from Guerrero, Hidalgo, Mex., has 4 costal folds between appressed toes; tail shorter than body; head width 6 in length from snout to vent; head length 3 7–10 in length of body; an enlarged tooth on premaxilla pierces lip; dull grayish, lighter below; white dots on sides; a trace of lighter above insertions of arms.

Total length 40.5, head 5, body 18.5, tail 17.

A female, Mus. Comp. Zool. 8020, same data as type, has head length 4 in length of body; no anal papillae; paraphenoids separated from vomerines by ⅔ length of latter; a light reddish streak from eye nearly to leg, widest above arm where it extends across back to meet its fellow of the opposite side; above this a dark streak and middle of back light reddish with dark V's. Otherwise like type.

Total length 37, head 3.5, body 14.5, tail 18.

Two other females, same data as type, agree with it in color.

8019 Total length 40, head 4, body 18, tail 18.

8021 Total length 38, head 4, body 16, tail 18.

No. 8019 is filled with the yolk masses of large eggs and is fully adult.

Habits: Five were taken on the heavily wooded Cerro de los Estropajos (between Jalapa and the hamlet of San Andres, and only a few miles from the former), altitude about 5000 feet. One was under a piece of wood on the ground and the others were under the bark of logs.

Remarks: While this smallest of all salamanders belongs to a group which contains six species, and which ranges from Mexico to Costa Rica, there is little danger of confusion save with one form, *pennatulus*. These two alone have the enlarged nostrils and the rudimentary feet. But *pennatulus* differs in having: no teeth on the maxilla; 6 costal folds between appressed toes; tail longer than head and body; a brown dorsal stripe and black sides.

U. S. N. M. No. 30352 is *O. townsendi*. The locality given is "Tehuantepec?, Sumichrast?." In view of the fact that *pennatulus* is more an animal of high mountains, and that Sumichrast recorded it from Cerro de la Defensa, near Cordoba, Vera Cruz, his record probably refers to *townsendi*, and possibly the National Museum specimen with uncertain locality is his basis for this record.

Vol. 35, pp. 7–10 March 20, 1922

PROCEEDINGS

OF THE

BIOLOGICAL SOCIETY OF WASHINGTON

FURTHER NOTES ON THE NOMENCLATURE OF NORTH AMERICAN JULIDAE AND NEMASOMIDAE.

BY RALPH V. CHAMBERLIN.

In a recent paper on The Julidae and Isobatidae in North America published in these Proceedings (Vol. XXXIV, pp. 81–84), it was pointed out that all members of these families thus far known from this country are identical with well-known European forms. The nomenclature adopted for these forms in that paper is in the main that which has been most commonly used by European myriopodists; but a further consideration of types and literature shows that some changes in this nomenclature must be made. In the present paper these changes and some additions to the synonymy are indicated.

JULIDAE.

Diploiulus londinensis (Leach).

1814. *Julus londinensis* Leach, Trans. Linn. Soc. London, XI, p. 378.
1886. *Julus psilopygus* Latzel, in Chalande, Contr. à la faune d. Myr. d. France.
1888 *Julus luridus* var. *oedurus* Latzel, op. cit., 2d list.
1905. *Cylindroiulus londinensis* var. *psilopygus* Latzel, Ribaut, Soc. d'Hist. Nat. Toulouse, 1905, p. 4.

The types of this species, as indicated in the original description and confirmed after reexamination by Pocock (1900), have the last tergite prolonged into a distinct, clubbed cauda or horn. They have the striae of the segments particularly numerous and close-set. This form, as pointed out by Jackson (1915) and the Brade-Birks (1918), is the same as the rare tailed form known on the continent as *psilopygus* Latzel and *lurieus oedurus* Latzel which had been equated and listed as a variety of *londinensis* by Ribaut (1905). Under the name *Julus londinensis*, *Cylindroiulus londinensis*, or *Diploiulus londinensis*, most continental writers, such as Meinert, Porath, Stuxberg, Attems and Verhoeff, have designated a much more

common form differing in wholly lacking caudal horn, in having the segmental striae less numerous, and in being of smaller average size. In the structure of the copulatory organs, however, it seems to be absolutely the same as the tailed form. The ecaudate form is the one occurring so commonly in the United States, where tailed specimens have never been found. In accord with the opinion of European workers who have had opportunity of studying both forms and the manner of their occurrence, the caudate and ecaudate individuals may be regarded tentatively as constituting distinct varieties of the species. The ecaudate variety must be designated by Wood's name *caeruleocinctus*, which has priority as indicated below.

Diploiulus londinensis caeruleocinctus (Wood).

1864. *Julus caeruleocinctus* Wood, Proc. Acad. Sci. Phil., p. 14.
1864. *Julus hortensis* Wood, ibid.
1866. *Julus multistriatus* Walsh, Practical Entomologist, 2, p. 34, with figure, and p. 70.
1866. *Julus londinensis* Porat, Bidr. t. känned. Sver. Myr., Dipl., p. 28.
1868. *Julus londinensis* Meinert, Naturh. Tidsskr., p. 8.
1869. *Julus londinensis* Porat, Öfvers. Vet. Akad. Förh., no. 6, p. 647.
1876. *Julus londinensis* Stuxberg, Öfvers. Vet-Akad. Förh., no. 8, p. 893.
1891. *Julus londinensis* Verhoeff, Berlin Ent. Zeitschr., XXXVI, p. 151, and in his subsequent writings, under *Iulus*, *Cylindroiulus*, etc.
1900. *Julus teutonicus* Pocock, Ann. Mag. Nat. Hist., p. 206.
1915. *Cylindroiulus londinensis teutonicus* Jackson, Lanc. and Ches. Nat., p. 433.
1918. *Cylindroiulus londinensis teutonicus* H. K. and S. G. Brade-Birks, Lanc. and Ches. Nat., p. 115.

There might be some doubt as to the identity of Wood's *caeruleocinctus* were we dependent upon his description alone; but, in the first place, specimens identified by Wood in the M. C. Z. collection are clearly the ecaudate form of *londinensis*, and, in the second place, Wood examined specimens of Walsh's *multistriatus* and declared them indistinguishable from his *caeruleocinctus* (Cf. Practical Entomologist, 1866, 2, p. 70). Walsh's description can apply to no other form than the present one and leaves no room for doubt as to the identity of *caeruleocinctus*. The specimens upon which Wood's original description was based were said to be in bad condition and had probably been dried, under which condition the blue banding which suggested the name commonly comes out more or less conspicuously. The description of hortensis was probably drawn from fresh material. Three names, then, as indicated in the synonymy above, had been applied in America to this ecaudate form of *londinensis* many years before Pocock proposed the name *teutonicus*.

Brachyiulus pusillus (Leach).

To the synonyms of this species as given in our previous paper (Proc. Biol. Soc. Wash., 1921, XXXIV, p. 82) should be added:

1898. *Brachyiulus littoralis* Verhoeff, Arch. Naturg., p. 154, pl. 6, fig. 29.

The *Brachyiulus pusillus* of Verhoeff described in the same place (Op. cit., p. 152, pl. 6, fig. 27) is not *pusillus* of Leach.

Ophyiulus pilosus (Newport).

1842. *Julus pilosus* Newport, Proc. Ent. Soc. London; also Ann. Mag. Nat. Hist., ser. 1, XI, p. 316.

1847. *Julus longabo* C. Koch, Die Myriap., II, p. 106, fig. 228.

For the later synonymy see our previous paper (Proc. Biol. Soc. Wash., 1921, XXXIV, p. 83).

As long ago as 1893 (Ann. Mag. Nat. Hist., ser. 6, XI, p. 249), Pocock pointed out that the types of *Julus pilosus* Newport were the same species as *Julus fallax* Meinert (1868), not of Latzel (1884). This identification has been more recently confirmed after reexamination of the types by the Brade-Birks (Ann. Mag. Nat. Hist., 1919, ser. 9, III, p. 254). Hence *pilosus* Newport, having precedence over *longabo* Koch as above indicated, must be used in designating this species.

NEMASOMIDAE.

The type of *Nemasoma, Nemasoma varicorne* C. Koch (Syst. d. Myriap., 1847, p. 116), is the same species as the type of *Isobates, Isobates semisulcatus* Menge (Neueste Schr. d. nat. Ges. in Danzig, 1851, IV, 4 Hft., p. 6). Hence *Isobates* is clearly a synonym of *Nemasama.* However, *Isobates* has continued in use in Europe apparently because *Nemasoma* has been regarded as preoccupied by a genus of Coleoptera proposed by Latreille in 1804 (Hist. Nat. Ins., XI, p. 239). The original spelling of Latreille's genus is *Nemozoma* (*νέμω*, possess, and *ζῶμα*, girdle), subsequently varied by Curtis and others to *Nemosoma.* This is certainly sufficiently different in spelling from Koch's genus, which also has a different derivation (*νῆμα*, thread, and *σῶμα*, body). The name *Nemasoma* was also subsequently proposed for a genus of Coleoptera, different from that of Latreille, by Solier (In Gay, Hist. Chile, 1851, V, p. 10). This genus of Coleoptera must, of course, receive a different name. There is no reason, however, why Koch's *Nemasoma* should not be used in place of *Isobates*, which it antedates by four years, and the name of the family be correspondingly Nemasomidae, proposed by Bollman as a subfamily in 1893.

Nopoiulus minutus (Brandt).

1841. *Julus minutus* Brandt, Recueil, p. 89.

For later synonymy see Proc. Biol. Soc. Wash., 1921, XXXIV, p. 83, under *Nopoiulus pulchellus.*

This species has been quite widely listed under Leach's name *pulchellus;* but recent examination of the types has shown that they lack eyes and are, in reality, the same as *Blaniulus guttulatus* (Bosc), the latter name having the priority.[1] Hence, with this transfer of *pulchellus* to a position of synonymy in Blaniulus, Brandt's name *minutus* becomes the valid designation of the present species.

[1]Cf. Hilda K. and S. Graham Brade-Birks, Ann. Mag. Nat. Hist., ser. 9, III, p. 256.

Vol. 35, pp. 11–12 March 20, 1922

PROCEEDINGS

OF THE

BIOLOGICAL SOCIETY OF WASHINGTON

TWO NEW AMERICAN ARACHNIDS OF THE ORDER PEDIPALPIDA.

BY RALPH V. CHAMBERLIN.

The two new pedipalpids described below belong to the family Schizomidae, formerly known as the Schizonotidae, a name not tenable because its type genus, Schizonotus, is preoccupied. The types of the new forms are in the Museum of Comparative Zoology at Cambridge.

Stenochrus, gen. nov.

Anterior division of carapace narrow and high, narrowed toward each end from the middle. Posterior division of carapace depressed, consisting of one piece which is not divided by a median longitudinal suture and presents anteriorly no separate lateral sclerites (mesopeltidia). Flagellum three jointed.

Genotype.—*S. portoricensis,* sp. nov.

Differing from Schizomus in its narrow, high carapace, the absence of mesopeltidia, and the three jointed flagellum. Differs from *Trithyreus* in the absence of mesopeltidia and in lacking a median suture in the posterior division of carapace.

Stenochrus portoricensis, sp. nov.

Body somewhat dusky fulvous, sometimes of a slightly reddish cast; terminal joints of abdomen and distal joints of legs more yellow.

With no trace of eye-spots. Anterior sternum about three-fourths as wide as long. Second thoracic tergite without trace of a median longitudinal suture and with no pale line in its place.

Trochanter of palpi with anterior inferior angle not produced, rectangular, sometimes a little less and sometimes a little more; convex ventral surface oblique, the ectal edge of the oblique surface fringed with setae, the mesal edge with setae and at its distal end with the usual short spine. Femur of palpi not quite twice as long as deep; its inferior edge very obtusely angled, the apex of angle about equidistant from ends of upper side; without processes. Patella with dorsal margin two and a half times as long as the depth; unarmed. Claw half the length of the tarsus (upper margin).

Coxa of first legs ending distinctly caudad of distal end of endite. Femur shorter than patella (about as 22 : 25) and a little longer than the tibia

(about as 22 : 21). Tarsus and metatarsus together about equal in length to the tibia. Metatarsus shorter than tarsus. Tarsus and metatarsus together ten times longer than thickness.

In the fourth legs the femur is very nearly 2.7 times longer than deep; edge of proximal end straight, vertical or nearly so, not extending back over trochanter, the upper angle rounded.

Last three segments of abdomen telescoped.

Flagellum, in the female, five times as long as thick; three-jointed, the terminal joint two-thirds of the total length.

Length of body from base of chelicerae to base of flagellum, 3 mm.; of palpi, 1.75 mm.; of first legs, 4.5 mm.; of fourth legs, 3.56 mm.

Locality.—Porto Rico: Coamo Springs. Several females taken in Nov., 1899.

Said in a field note to have been taken "on a very wet bank in deep shade. Very active."

Schizomus guatemalensis, sp. nov.

Carapace and legs fulvous, a little smoky, the palpi distally more reddish. Dorsum of abdomen somewhat darker, more dusky, than carapace. Sternum and coxae beneath more yellow.

Head with no trace of eye-spots. Cephalic sternum very nearly as wide as long. The second division of carapace has no indication of a median longitudinal line.

Palpi less than half the length of the body. Trochanter of palous deep; its anterior inferior angle not produced, a little obtuse. Femur nearly twice as long as deep (about as 1.9 : 1); its inferior margin convex and without process. The patella with dorsal margin about two and a half times as long as the depth, its inferior margin nearer twice the depth; unarmed claw half as long as the upper margin of the tarsus. Tarsus and metatarsus together about 10.5 times longer than thick and metatarsus about five-sixths as long as the tarsus.

Coxa of first legs terminating caudad of outer angle of endite. Femur shorter than patella, longer than tibia. Tarsus and metatarsus together clearly shorter than the tibia (about as 4:5). Metatarsus shorter than tarsus but longer than tarsus without its distal article; distal article of tarsus half as long as the second metatarsal joint.

In the fourth legs the femur is three times as long as deep, with its proximo-dorsal angle distally rounded, not at all projecting proximad over the trochanter.

Last three joints of abdomen moderately telescoped.

Flagellum about four and a half times longer than thick; maximum setae nearly two-thirds as long as flagellum.

Length of body from base of chelicerae to base of flagellum, 4.56 mm.; of palpi, 1.92 mm.; of first legs, 5.88 mm.; of fourth legs, 4.56 mm.

Locality.—Guatemala: San Rafael. One female.

This species suggests *simonis* Hansen and Sorenson of Venezuela, but in the female may be distinguished by the shorter and stouter flagellum, in having the metatarsus and tarsus much longer in proportion to the tibia, in lacking "eye-spots," in the shorter palpi, etc.

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PROCEEDINGS
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OTOPHIDIUM WELSHI, A NEW CUSK EEL, WITH NOTES ON TWO OTHERS FROM THE GULF OF MEXICO.[1]

BY JOHN T. NICHOLS[2] AND C. M. BREDER, JR.[3]

In reviewing certain material from the Gulf of Mexico it was found that an undescribed *Otophidium* was represented therein, which is believed to be entirely worthy of specific rank, while two other species of the family *Ophidiidae*, although known, have been so far only described from very scant material which makes the redescriptions embodied in this paper necessarily of some value to students of these little known fishes. The material which forms the basis of this description and the two redescriptions was collected under the direction of the United States Bureau of Fisheries; the writers being indebted to that institution for permission to make use of the specimens.

The accompanying sketches are from the pen of Mr. W. W. Welsh, being drawings which he had executed for his personal notes. He probably expected at some date to use them in descriptions of these forms, which plan he was prevented from carrying out by his untimely demise.

Lepophidium brevibarbe (Cuvier).

A short spine at tip of snout. Occiput and opercles scaly. The scales do not run forward of the anterior margin of pupil above, and do not reach posterior margin of pupil below. Developed gill-rakers 4 in number. Scales about 170 to 185, not closely imbricated and somewhat irregularly arranged, the longitudinal rows above the lateral line, anteriorly, oblique to it, running diagonally backward and upward, those immediately below the lateral line more or less parallel to it, those lower down more or less

[1] Published by permission of the U. S. Bureau of Fisheries.
[2] American Museum of Natural History.
[3] New York Aquarium.

parallel to the ventral outline. This causes anterior rows to converge towards a point in the middle of the side. Dorsal and anal in alcohol,

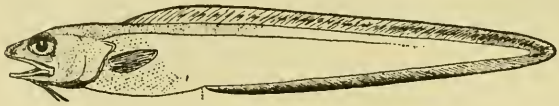

FIG. 1—*Lepophidium brevibarbe* (Cuvier).

narrowly margined with black. Head 5.0 in length to base of caudal (205 mm. specimen) to 4.8 (130 mm. specimen). Depth 7.4 to 8.3; pectoral 10.8. Eye 4.4 to 4.0 in head; snout 4.4 to 4.5; maxillary 2.1; pectoral 2.2; longest ventral filament 3.9 to 3.5, in the largest and smallest specimens, respectively; interorbital in eye, 1.5; maxillary extends to posterior margin of eye.

Head somewhat smaller, pectoral slightly shorter, scales somewhat fewer than described for *Lepophidium proratus* (Jordan & Bollman) of the Pacific.

Three specimens, 205, 187 and 130 mm. to base of caudal. Taken by the "Grampus" in 7 fathoms of water off Galveston, Tex., (Station 10478) March 9, 1917, trawl.

Ophidion holbrooki (Putnam).

No spine at tip of snout or on opercle. Head scaleless. Scales on body rudimentary, embedded, linear, placed approximately perpendicularly to one another in groups, as in *Anguilla*, variable in length, maximum approximately half pupil. Air bladder slender, tapering backward as figured by Putnam (Proc. Bost. Soc. Nat. Hist. 1874, 342). Gillrakers 4. Dorsal

FIG. 2—*Ophidion holbrooki* (Putnam).

and anal narrowly margined with black. Head 4.0 in length to base of caudal (in 232 mm., 8 ⅞ in. specimen) to 4.6 (in 152 mm., 6 ⅛ in. specimen). Depth 5.2 to 6.8; pectoral 10.4 to 10.5; eye 5.2 to 4.0 in head; snout 4.3 to 4.0; maxillary 2.3 to 2.3; pectoral 2.6 to 2.3 in head; longest ventral filament, 2.2 to 1.8; interorbital in eye 1.4 to 1.6; in the largest and smallest specimens, respectively. Maxillary extends approximately to posterior margin of pupil.

These measurements give smaller head and other proportional differences from (6 inch) *holbrooki*, as described by Putnam. As there is considerable age variation we do not feel justified in describing our material as new on that basis.

Three specimens 232, 182 and 152 mm. in length to base of caudal. Taken by the "Grampus" in 10½ fathoms, 11 miles SSW from Heald Lightship (Station 10479) March 16, 1917, trawl.

Otophidium welshi, new species.

The type, No. 85512, United States National Museum, collected at Grampus Station 10478, southwest from Braye's Light, Texas, in ten fathoms of water, trawl. Head scaleless, scales ending on the nape, on a vertical over the opercle. Scales on body rudimentary, embedded, linear,

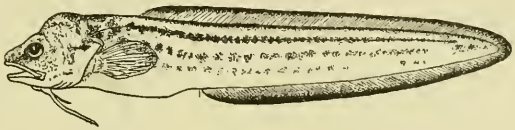

Fig. 3—*Otophidium welshi,* new species.

about 3 to 4 times as long as broad, approximately placed perpendicularly to one another in groups, as in *Anguilla,* variable in length, maximum approximately half pupil. Air bladder short, thick, with very large ventral foramen which is encompassed by a thickened ridge. A concealed spine on the margin of the opercle. Gill-rakers 4. Length, 194 mm. to base caudal. Head 5.2 in that length; depth 6.4; pectoral in head 1.6; eye 5.1; snout 4.5; maxillary 2.3; longest ventral filament 1.5; interorbital 5.1. Profile low and slanting to past middle of eye, then rising abruptly to a high gibbous rounding keeled nape. Four lengthwise dark bands on the side. The uppermost solid; confluent with its fellow across the back and expanding irregularly on the nape. The three lower ones increasingly broken, so that the lowermost, on a level with the pectorals, consists of only a few vague marks, entering an irregular jagged blotch in front, which it shares with the band above it. Preorbital, suborbital and postorbital regions punctulate with dark dots. A dark blotch on upper margin of opercle. These dark body markings are seal brown in alcohol. Dorsal pale basally, with an elongate black marginal blotch between ½ and ⅓ the length of the head, beginning near its origin. Behind this blotch the fin is edged with a narrow dusky margin, which broadens slightly backward and becomes narrow again and ill-defined on the caudal, though meeting the broad black margin of the anal below. Anal pale basally, but with inconspicuous dark punctuations. Pectorals pale, punctulate with brown at margin and on base.

Another specimen with the same data is 199 mm. in length. Head 5.1, depth 6.6. Otherwise identical with type. *Otophidium welshi*[1] is distinguished by its striped coloration, its gibbous nape, and its proportions, the latter of which is most like *Otophidium galeoides* (Gilbert) of the Gulf of California.

[1]Named for memory of William W. Welsh, the collector.

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PROCEEDINGS

OF THE

BIOLOGICAL SOCIETY OF WASHINGTON

STUDIES IN THE TYRANNIDÆ.

II. The Restricted Genus Myiobius.

BY W. E. CLYDE TODD.

It is over nine years ago since the writer first had occasion to critically examine the status of the various members of this group, in connection with the description of a new species belonging thereto. This preliminary study sufficed to convince him that the group in question was in serious need of revision, certain of its components being but little known, and the interrelationships of all the forms very imperfectly understood. With so much fresh material now available in the collections of the Carnegie Museum, and of the several institutions listed in Part I of the present series of papers, the time has seemed ripe for carrying out a long-cherished plan involving a fuller study of this genus. Three hundred and ninety-nine specimens in all, including types or topotypes of most of the described forms, have been examined in preparing the present paper, which follows the same general plan as the writer's recent revision of the genus *Pipromorpha*. Acknowledgments are due to the same parties as are named in that paper for the loan of material.

Genus **Myiobius** Darwin.

Platyrhynchus, part (not *Platyrinchus* Desmarest, 1805) Spix, Avium Species Novæ Bras., II, 1825, 9 (no type specified).

Tyrannula (not *Tyrannulus* Vieillot, 1816) Swainson, Zool. Journ., III, 1827, 358 (orig. diag.; type, *Muscipeta barbata*=*Muscicapa barbata* Gmelin).

Myiobius Darwin, Zool. Voy. Beagle, III, Birds, 1839, 46 (ex Gray, MS.; vice *Tyrannula* Swainson; type, *Muscicapa barbata* Gmelin).—Gray, List Gen. Birds, 1840, 30 (syn.); ed. 2, 1841, 41 (syn.).—Gray, Gen. Birds, I, 1845, 248, part (list of species).—Gray, Cat. Gen. and Subgen. Birds, 1855, 49 (syn.).—Cabanis and Heine, Museum Heineanum,

II, 1859, 67 (list of species).—Sclater, Proc. Zool. Soc. London, 1860, 465 (crit.; list of species).—Gray, Hand-List Birds, I, 1869, 359, part (syn.; list of species).—Giebel, Thes. Orn., II, 1875, 662, part (syn.; list of species).—Sclater, Cat. Birds Brit. Mus., XIV, 1888, 198, part (syn.; monogr.;).—Waterhouse, Ind. Gen. Avium, 1889, 139 (references).—Sharpe, Hand-List Birds, III, 1901, 131, part (list of species).—Ridgway, Bull. U. S. Nat. Mus., No. 50, IV, 1907, 486 (syn.; diag.; key to forms).

Early references to the birds of this group are comparatively few in number; they appear under the generic names *Muscicapa* and *Muscipeta*. Spix in 1825 described a member of the genus (as now understood) under the name *Platyrhynchus xanthopygus*, but the generic name he used had long been preoccupied. Two years later Swainson formally established the genus *Tyrannula*, designating *Muscipeta* (=*Muscicapa*) *barbata* as its type. The same name with a masculine ending had previously been used by Vieillot in 1816, and it is worth while noting that under one of the rulings of the International Commission on Zoological Nomenclature this use would not invalidate Swainson's name, which would thus become the proper designation for this genus. There seems to be a general disposition to ignore this particular ruling (a movement in which we concur), and under the circumstances we therefore pass on to *Myiobius*, which was first used by Darwin in 1839. Darwin here attributes it to Gray, and gives it as a substitute for *Tyrannula* of Swainson. This is fortunate, inasmuch as its type is thus the same as that of *Tyrannula*, and not one of the four species arranged under it at this place, none of which are now recognized as properly belonging to it. The case is parallel to that of *Pachyramphus*, a few pages farther on in Darwin's work, to which Dr. Richmond has already called attention (Proceedings U. S. National Museum, LIII, 1917, 568, note).

As used by Gray in 1845 *Myiobius* had a wide application, being even extended to include what is now known as *Myiarchus*. Cabanis, writing in 1859, was the first author to restrict it to the three closely allied species which he recognized at that time, while the following year Sclater used the name for these and a fourth species, but in a subgeneric sense only. In Volume XIV of the Catalogue of the Birds in the British Museum he admitted no less than twenty-one species under *Myiobius*, and Sharpe followed him in 1901 with twenty-eight. As used by these authors the genus included such diverse forms as to render its diagnosis virtually impossible, and it remained for Mr. Ridgway to insist upon its restriction to those originally assigned to it by Cabanis and to their immediate allies. As thus restricted the group is sufficiently homogeneous, and may be readily recognized by the following combination of characters:

Bill shorter than the head, typically Tyrannine, flat, wide at base, with strongly ridged culmen and decurved tip, terminally compressed in vertical outline, the lateral outlines nearly straight and sub-parallel basally. Nostrils oval, in basal half of bill. Rictal bristles excessively developed, reaching beyond tip of bill when directed forward, and feathers of chin with more or less bristly points. Wings moderate, rounded, the tenth (outer-

most) primary shorter than the secondaries, the sixth, seventh and eighth subequal and longest, and with outer webs slightly sinuate. Tail varying from about five-sixths of to equal to the wing, even or somewhat rounded, the feathers rather broad, with sub-acuminate tip. Feet moderate, the hind claw about equal to hind toe, the other claws much weaker; outer toe united to middle toe for the whole of its basal phalanx, and inner toe united to middle toe for about half of its basal phalanx. Coloration olive greenish, the pileum (in adult males) with a partially concealed vertical patch of yellow, the rump yellow; tail blackish; under parts yellowish, buffy, or more or less ochraceous.

As is often the case with such homogeneous genera, the discrimination of the several forms belonging to this group presents a problem of exceptional difficulty, even for the Tyrannidæ. Before attempting to present our own views it may be well to give a brief historical resumé of the subject. The first species to be formally described was the *Muscicapa barbata* of Gmelin, 1788, from Cayenne, based on Buffon's figure and account. Then came the *Muscicapa mastacalis* of Wied, 1821, and the *Platyrhynchus xanthopygus* of Spix, 1825, both names referring to the bird of Brazil. In 1857 Sclater described a third member of the group from Mexico, *Tyrannula sulphureipygia*, using Swainson's generic name. In the meantime *Myiobius* had come into common use for the group, as well as for certain more remotely related forms, so that when Sclater described a fourth species from Ecuador in 1860 he called it *Myiobius villosus*. In 1863 Lawrence pointed out distinctive characters for the Central American bird, which up to that time had passed as *barbatus*, calling it *atricaudus*, but subsequent authors were by no means a unit in accepting this name. In fact, the true application of the term *barbatus*, although properly indicated, it is true, by Cabanis in 1859, was not appreciated for many years, due largely to scarcity of specimens, the name being used indiscriminately for several perfectly distinct forms. The resultant confusion in the nomenclature may be imagined. In 1888 we find von Berlepsch describing a sixth species, *M. ridgwayi*, and Sclater still refusing to admit *atricaudus* to recognition except as a subspecies, while at the same time confusing "*xanthopygius*" (=*mastacalis*) with *barbatus*. In 1906 Mr. Hellmayr pointed out characters for separating *barbatus*, *mastacalis*, and *atricaudus*, which he regarded as subspecies, while keeping *ridgwayi* specifically distinct. Mr. Ridgway in 1907 arranged the forms somewhat differently, keeping "*xanthopygus*," *sulphureipygius*, and *villosus* together as conspecies, and similarly uniting *barbatus* and *atricaudus*, leaving *ridgwayi* to stand by itself. Mr. Hellmayr in 1911 again insisted that the Brazilian form, *mastacalis*, had nothing to do with *sulphureipyius*. In the meantime a southern race of the latter had been worked out by Mr. Bangs. The next year the present writer described a new form, *modestus*, allied to *atricaudus*, from Venezuela, and later on another close ally of the same, *suffusus*, as well as a very distinct species, *semiflavus*, both from Colombia. This brings the history of the group down to date.

With such diverse treatment from leading authorities it is little wonder that the literature of the group is in such a confused state, nor do we flatter

ourselves that our efforts to disentangle its complicated synonymy have been entirely successful. Good series of specimens are absolutely necessary in a case of this kind, and it is easy to see how much of this confusion has arisen when we remember the amount and kind of material with which authors generally have had to deal. With an unusually large and finely prepared series of specimens for study we are satisfied that the tendency toward the reduction in the number of specific types has gone too far in this genus, if not also in other genera of the Tyrannidæ. If *M. ridgwayi* is specifically distinct, so also is *M. mastacalis* from *M. barbatus*, which can invariably be distinguished one from the other by characters fully as good as those which apply to *M. ridgwayi*. *M. atricaudus*, as shown beyond, is not so closely related to *M. barbatus* as has generally been supposed, and very probably their respective ranges overlap. *M. semiflavus*, an extreme development of *M. barbatus*, inhabits a region adjacent to that occupied by a race of *M. atricaudus*, with no sign of intergradation. *M. atricaudus* and *M. sulphureipygius aureatus* are known to occur together, and Dr. Chapman has lately shown that *M. villosus*, as the Subtropical Zone representative of the latter, must be distinct specifically. In short, there is every reason to believe that the forms whose ranges adjoin are fully as distinct from each other as those whose ranges are actually known to overlap. In discussing the case of *Eupsychortyx* (Auk, XXXVII, 1920, 213), we have already had occasion to animadvert upon this matter, and we here reiterate our belief that the fact of geographical collocation ought not to constitute the sole (or even the principal) criterion for the recognition of species as distinguished from subspecies. Take the case of the genus *Empidonax*, for example—a storm-center for many years among American ornithologists—whose members are now known to be distinct but closely allied species, distinguished by slight but constant characters, and different in life, nesting, etc. Caution is certainly necessary when dealing with such a family as the Tyrannidæ, in which slight differences often have great value. We are convinced that in the case of *Myiobius* we have to do, as in *Empidonax*, with a group of closely related but in the main distinct species, and we venture to predict that when their life-histories come to be as well known as are those of the North American *Empidonaces* similar differences in their notes, haunts, nests, and eggs will come to light.

Viewing the group as a whole, therefore, and essaying a consistent treatment on the above lines, we would recognize seven species and four additional subspecies, ranging from southeastern Mexico to southern Brazil, mainly in the Tropical Zone. The key which follows, although not strictly dichotomous, is believed to indicate approximately their real relationships and place them in their natural order as nearly as may be.

Key to the Species and Subspecies of Myiobius.

A. Wing longer than tail; tail nearly or quite even; under parts greenish or yellowish, with little or no buffy.

a. No ochraceous color on breast and sides.

b. Rump barium yellow; under parts Martius yellow, more or less shaded anteriorly and laterally with old gold.

Myiobius mastacalis.

b′. Rump and under parts (posteriorly) Martius yellow, the breast more or less shaded with citrine, the throat deep colonial buff.....*Myiobius barbatus.*

b″. Rump and under parts pale lemon yellow, the breast and sides shaded with pyrite yellow or yellowish citrine; throat Martius yellow.....*Myiobius semiflavus.*

a′. Breast and sides distinctly washed with ochraceous.

b. Smaller (wing of male averaging 65 mm.; tail, 54.5 mm.); upper parts brighter green.

c. Color of breast and sides darker, and yellow of under parts duller and less extended posteriorly.

Myiobius sulphureipygius sulphureipygius.

c′. Color of breast and sides paler, and yellow of under parts clearer and more extended posteriorly.

Myiobius sulphureipygius aureatus.

b′. Larger (wing of male averaging 70 mm.; tail, 61 mm.); upper parts darker green.

c. Brighter; rump Martius yellow; breast and sides orange citrine.....*Myiobius villosus villosus.*

c′. Paler; rump baryta yellow, breast and sides old gold.

Myiobius villosus **peruvianus.**

A′. Wing nearly or quite equal to tail; tail obviously rounded; under parts more or less buffy.

a. Rump Martius yellow; under parts barium yellow, with more or less buffy suffusion.

b. Above paler; under parts duller, more uniformly buffy, less yellowish.....*Myiobius atricaudus modestus.*

b′. Above paler; under parts paler and more uniform, breast less buffy.....*Myiobius atricaudus suffusus.*

b″. Above darker; under parts barium yellow, anteriorly shaded with old gold or honey yellow.

Myiobius atricaudus atricaudus.

a′. Rump and entire under parts uniform yellowish buff.

Myiobius ridgwayi.

Myiobius mastacalis (Wied).

Muscicapa mastacalis Wied, Reise nach Brasilien, II, 1821, 151 (Rio Catolé, Bahia, Brazil; orig. descr.; types now in coll. Am. Mus. Nat. Hist.).

Muscipeta barbata (not *Muscicapa barbata* Gmelin) Swainson, Zool. Illustrations, II, 1822, pl. 116 and text, excl. syn. (Pitanga ["twenty leagues west of Bahia"], Brazil; descr.; crit.).—Wied, Beiträge Naturg. Bras., III, 1831, 934 (Brazil; references; descr.; habits).

Platyrhynchus xanthopygus Spix, Avium Species Novæ Bras., II, 1825, 9, pl. 9, fig. 1 ([Rio de Janeiro], Brazil; orig. descr.; type in coll. Munich Mus.).

Tyrannula barbata Hartlaub, Syst. Verz. Nat. Samm. Ges. Mus. [Bremen], 1844, 50 (Brazil; Swainson's reference).

Myiobius barbatus Burmeister, Syst. Ueber. Thiere Bras., II, 1856, 501, excl. syn. part (Brazil; descr.; references; habits).—Allen, Bull. Am. Mus. Nat. Hist., II, 1889, 275, note (crit. on Wied's types).—Gœldi, Aves do Brazil, 1894, 326 (Brazil).—Kœnigswald, Journ. f. Orn., XLIV, 1896, 359 (Estado de São Paulo, Brazil; Brazilian references). —von Ihering, Rev. Mus. Paulista, III, 1898, 201 (diag.; Brazilian references; range).—Euler, Rev. Mus. Paulista, IV, 1900, 49 (Brazil; nesting).—von Ihering, Rev. Mus. Paulista, IV, 1900, 155 (Cantagallo and Nova Friburgo, Brazil), 236 (nesting).—Oates and Reid, Cat. Birds' Eggs Brit. Mus., III, 1903, 203 (Rio Janeiro, Brazil; descr. eggs).—von Ihering, Auk, XXI, 1904, 315 (nest).—Hagmann, Bol. Mus. Gœldi, IV, 1904, 11 (Spix's reference), 23 (Wied's reference) 47 (Burmeister's reference), 88, part (von Pelzeln's reference).—Snethlage, Bol. Mus. Gœldi, V, 1907, 49, part (Ourem, Rio Guama, and Rio Tapajoz, Brazil).—von Ihering, Aves do Brazil, 1907, 289, part (Brazil; range).—Snethlage, Journ. f. Orn., LVI, 1908, 495, in text, 503 (Goyana, Rio Tapajoz, Brazil), 528 (Arumatheua, Rio Tocantins, Brazil).—Snethlage, Bol. Mus. Gœldi, VIII, 1914, 391, part (localities in lower "Amazonia"; descr.).

Myiobius xanthopygus Cabanis and Heine, Mus. Heineanum, II, 1859, 67 (Bahia, Brazil; references; crit.).—Euler, Journ. f. Orn., XVI, 1868, 185 (Cantagallo, Brazil; nest and eggs).—Cabanis, Journ. f. Orn., XXII, 1874, 88 (Cantagallo, Brazil).—Giebel, Thes. Orn., II, 1875, 668 (range; syn.).—Heine and Reichenow, Nom. Mus. Heineani Orn., 1883, 144 (Bahia, Brazil).—von Berlepsch, Auk, V, 1888, 457, 458, in text (Bahia, Brazil; crit.).—Sharpe, Hand-List Birds, III, 1901, 131 (range, in part).

Myiobius xanthopygius Sclater, Proc. Zool. Soc. London, 1860, 465 (in list of species; range).—Sclater, Cat. Am. Birds, 1862, 225 (Brazil; references).—Gray, Hand-List Birds, I, 1869, 359 (ref. orig. descr.; range).—von Pelzeln, Orn. Bras., ii, 1869, 113, part (Registo do Sai, Brazil; meas.; crit.); iv, 1870, 426 (Bahia, Brazil; Brazilian records).— von Pelzeln, Nunquam Otiosus, II, 1872, 292 (Neu Freiburg, Brazil).— von Berlepsch, Ornis, XIV, 1907, 481, in text (crit.).

[*Myiobius barbatus*] b. subsp. *typica* Sclater, Cat. Birds Brit. Mus., XIV, 1888, 200, part ("Amazons" and Bahia, Brazil; references).

Myiobius barbatus var. *xanthopygia* Dubois, Syn. Avium, I, 1902, 245 (ref. orig. descr.; range).

Myobius barbatus barbatus Hellmayr, Nov. Zool., XIII, 1906, 362, part (Pará, Brazil; crit.); XIV, 1907, 357 (Humaytha, Rio Madeira, Brazil).

Myiobius barbatus mastacalis Hellmayr, Nov. Zool., XIII, 1906, 362, in text (Bahia, Brazil).—Hellmayr, Abhand. K. Bayerischen Akad. Wiss., II Kl., XXII, 1906, 641 (Brazilian references and localities; meas.; crit.).—von Ihering, Aves do Brazil, 1907, 290 (Estado de São Paulo, Ubatuba, and Iguape, Brazil; Brazilian localities and references).—Hellmayr, Nov. Zool., XV, 1908, 51 (Fazenda Esperanca, Goyaz, Brazil; crit.); XVII, 1910, 299 (Maruins, Marmellos, and Humaytha, Rio Madeira, Brazil; crit.).—Hellmayr, Proc. Zool. Soc. London, 1911,

1135, 1136 (range; crit.).—Hellmayr, Abhand. K. Bayerischen Akad. Wiss., Math.-phys. Kl., XXVI, 1912, 26, 90 (Peixe-Boi and San Antonio do Prata, Brazil; range; crit.).—von Ihering, Rev. Mus. Paulista, IX, 1914, 440, 480, pl. 8, fig. 9, pl. 9, fig. 3 (nest and eggs).

Myiobius xanthopygus xanthopygus Ridgway, Bull. U. S. Nat. Mus., IV, 1907, 487 (diag.; references).

Myiobius mastacalis Todd, Ann. Carnegie Mus., VIII, 1912, 208, in text (crit.).—Brabourne and Chubb, Birds S. Am., I, 1912, 296 (ref. orig. descr.; range).

Description.—Male: above olive green, the pileum with a partially concealed median vertical spot of lemon chrome; rump barium yellow; wings dusky, externally more or less light brownish olive, the remiges edged with buffy below; tail and upper tail-coverts plain dark brown or dusky; under parts Martius yellow, the throat and sides of the head paler and duller, the breast, sides, and crissum more or less shaded with old gold; "iris brown; feet flesh gray; bill black above, pale below." Female similar, but smaller, and the vertical spot wanting or reduced to a trace.

Measurements.—Male: wing, 64–71 (66.5); tail, 55–61 (58); bill, 10.5–11.5 (11); tarsus, 15.5–17 (16.5). Female: wing, 55–62 (59); tail, 50–54 (52.5); wing, 10–11 (10.5); tarsus, 13.5–15 (15).

Range.—Brazil, from the Amazon and Madeira Rivers south to São Paulo and east to Bahia.

Remarks.—This species was described by Maximilian, Prince of Wied, just one hundred years ago, his types being still preserved in the American Museum of Natural History. Four years later it was given another name by Spix, but in the meantime Wied had concluded that his bird was identical with the *Muscicapa barbata* of Gmelin, and in 1859, when Cabanis finally became satisfied that the Brazilian bird was really distinct from that of Cayenne, it was Spix's name and not Wied's that was adopted. Not until 1906, indeed, when Mr. Hellmayr critically examined Spix's types, pointing out the pertinence and priority of Wied's name, did *mastacalis* finally come into use. Numerous authors had in the meantime followed Sclater's lead in denying recognition to the Brazilian form, and with the nomenclature of the group in such a confused state it was little wonder that without adequate material for comparison they could not agree. The late Count von Berlepsch, however, expressed a decided opinion on this point in 1888, which was fully indorsed by Mr. Hellmayr in 1912. We can not follow this eminent authority, however, in considering *M. mastacalis* only subspecifically separable from *M. barbatus*. While the two forms are undoubtedly closely related, we have yet to see a specimen that can not be unequivocally referred to one or the other. In *mastacalis* the rump and under surface are obviously paler than in *barbatus*—barium yellow or naphthalene yellow, instead of picric yellow or Martius yellow—and the latter is shaded with old gold instead of citrine. There is a marked variation, however, in the amount of this shading, some specimens lacking it entirely (except on the tibiæ and crissum), while in others it is conspicuous. These differences appear to be correlated with a variation in the color of the upper parts, the examples with the most buffy suffusion having the

back and wings obviously tinged with brownish, while in those with uniform under parts the upper surface is a purer olive green. In the latter phase the bird more nearly resembles *barbatus*, and it is easy to understand how with only a few specimens it should have been thus allocated by sundry authors. Our series shows, however, that to whatever cause these variations may be attributed they are certainly not geographical in character.

M. mastacalis was described from the Rio Catolé, in the province of Bahia, Brazil, and a year later was again recorded from the Bahia region by Swainson. Spix's type of *xanthopygus* came from Rio de Janeiro. In more recent years the species has been traced north to the Amazon, west to the Madeira, and south to the state of São Paulo, so that it appears to occupy by far the larger part of Brazil. Euler describes the nest as an oblong structure, with the entrance on one side, and a kind of conical roof all around. The eggs are two in number, white, with a rosy blush, with a wreath of dark reddish and violet reddish spots around the larger end.

Specimens examined.—Brazil: Benevides, 2; Colonia do Mojuy, 4; Villa Braga, 9; Miriti tuba, 7; Boim, Rio Tapajoz, 1; Cameta, Rio Tocantins, 3; Arumatheua, Rio Tocantins, 3; Victoria, Rio Xingu, 1; Apehu, 1; Ourem, Rio Guama, 2; Santa Julia, Rio Iriri, 1; San Antonio do Prata, 2; Ilhios, Bahia, 1; Bahia, 6; Baron Melgaco, Matto Grosso, 1; Broken Canoe Rapids, Rio Roosevelt, Matto Grosso, 1. Total, 45.

Myiobius barbatus (Gmelin).

"Barbichon de Cayenne, mas" D'Aubenton, Pl. Enlum., 1778, 830, fig. 1. —Buffon, Hist. Nat. Oiseaux, IV, 1778, 534, part (Cayenne, French Guiana; descr. male; habits).

"Whiskered Flycatcher" Latham, Gen. Syn. Birds, II, i, 1782, 364, part (Cayenne, French Guiana; descr. male; habits; ex Buffon).—Stephens, in Shaw's Gen. Zool., X, ii, 1817, 352, part (Cayenne, French Guiana; references; descr. male; habits).—Latham, Gen. Hist. Birds, VI, 1823, 245, part (Cayenne, French Guiana; references; descr. male; habits).

Muscicapa barbata Gmelin, Syst. Nat., I, ii, 1789, 933 (Cayenne, French Guiana, ex Buffon et Latham; diag.).—Latham, Ind. Orn., II, 1790, 488, part (Cayenne, French Guiana; diag. male; references).—Strickland, Ann. and Mag. Nat. Hist., (1), VII, 1841, 28, in text (taken as type of *Tyrannula* Swainson).

Myiobius barbatus Cabanis, Arch. f. Naturg., 1847, 248 (designated as type of *Myiobius*).—Gray, Gen. Birds, I, 1845, 249 (in list of species; references).—Cabanis, in Schomburgk, Reisen in Britisch-Guiana, III, 1848, 701 (British Guiana).—Cabanis and Heine, Mus. Heineanum, II, 1859, 67, note (references).—Sclater, Proc. Zool. Soc. London, 1859, 45 (range); 1860, 465, part (in list of species; range).—Sclater and Salvin, Proc. Zool. Soc. London, 1867, 751, and 1873, 281 (Xeberos and Chyavetas, Peru).—von Pelzeln, Orn. Bras., ii, 1869, 113 (Borba [?] and Marabitanas, Brazil); iv, 1870, 426 (Brazil, ex Lichtenstein).—Gray, Hand-List Birds, I, 1869, 359 (in list of species; range).—Sclater and Salvin, Nom. Avium Neotrop., 1873, 51, part (range).—Giebel, Thes. Orn., II, 1875, 663 (syn.; range).—Salvin, Cat. Strickland Coll.,

1882, 312 ("S. America"; references).—Taczanowski, Proc. Zool. Soc. London, 1882, 21 (Yurimaguas, Peru).—Taczanowski, Orn. Perou, II, 1884, 298 (Xeberos, Chyavetas, and Yurimaguas, Peru; descr.; references).—Salvin, Ibis, 1885, 297 (Bartica Grove, Merumé Mountains, Camacusa, Mount Roraima, and Atapurow River, British Guiana).—Tristram, Cat. Coll. Birds, 1889, 124 (Cayenne, French Guiana).—Sharpe, Hand-List Birds, III, 1901, 131 (range).—von Berlepsch and Hartert, Nov. Zool., IX, 1902, 49 (Suapure and La Pricion, Caura River, Venezuela; British Guiana; crit.).—Dubois, Syn. Avium, I, 1902, 245 (references; range).—Snethlage, Bol. Mus. Gœldi, V, 1907, 49, part (Bom Lugar, Rio Purús, Brazil).—von Berlepsch, Ornis, XIV, 1907, 481, in text (crit.).—von Berlepsch, Nov. Zool., XV, 1908, 129 (Ipousin, Rio Approuage, and Oyapoc, French Guiana).—Penard, Vogels van Guyana, II, 1910, 254 (Guiana; descr.; habits; crit.).—Todd, Ann. Carnegie Mus., VIII, 1912, 208, in text (crit.).—Brabourne and Chubb, Birds S. Am., I, 1912, 296 (ref. orig. descr.; range).—Snethlage, Bol. Mus. Gœldi, VIII, 1914, 391, part (St. Antonio do Cachoeira and Obidos, Brazil).—Chubb, Birds Brit. Guiana, II, 1921, 215 (British Guiana localities and references; descr.).

Myiobius barbata Bonaparte, Consp. Avium, I, 1850, 187 (range; references [part]).

Myiobius xanthopygius (not *Platyrhynchus xanthopygus* Spix) Sclater, Proc. Zool. Soc. London, 1866, 189 (upper Ucayali River, Peru).

[*Myiobius barbatus*] b. subsp. *typica* Sclater, Cat. Birds Brit. Mus., XIV, 1888, 200, part (Bartica Grove, Atapurow River, Camacusa, and Mount Roraima, British Guiana; Oyapoc, French Guiana; references).

Myiobius sulphureipygius (not of Sclater) Menegaux, Bull. Mus. d'Hist. Nat. Paris, 1904, 118 (Saint Georges d'Oyapock and Saint Jean du Maroni, French Guiana; range).

Myiobius barbatus barbatus Hellmayr, Abhand. K. Bayerischen Akad. Wiss., II Kl., XXII, 1906, 642 (ref. orig. descr.; diag.; range; Natterer's specimens).—Ridgway, Bull. U. S. Nat. Mus., No. 50, IV, 1907, 487 (diag.; references).—Hellmayr, Nov. Zool., XIII, 1906, 362, part (British Guiana and Caura River, Venezuela; crit.); XIV, 1907, 357, part (British Guiana); XVII, 1910, 299 (Borba, Rio Madeira, Brazil, ex von Pelzeln; crit.).—Hellmayr, Proc. Zool. Soc. London, 1911, 1135, 1136 (range; crit.).—Cherrie, Mus. Brooklyn Inst. Sci. Bull., II, 1916, 242 (Caura River, Venezuela, ex von Berlepsch and Hartert).—Chapman, Bull. Am. Mus. Nat. Hist., XXXVI, 1917, 465 (Florencia and La Morelia, Colombia; British Guiana).—Bangs and Penard, Bull. Mus. Comp. Zool., LXII, 1918, 78 (Jaraweg, Dutch Guiana).

Myiobius barbatus subsp. Snethlage, Journ. f. Orn., LVI, 1908, 11 (Bom Lugar, Rio Purús, Brazil; crit.).

Myiobius barbatus xanthopygus Snethlage, Bol. Mus. Gœldi, VIII, 1914, 391 (Bom Lugar, Rio Purús, Brazil; diag.).

Description.—Male: above olive green, the pileum with a partially concealed median vertical spot of lemon chrome; rump Martius yellow; wings dusky brown, externally buffy brown or buffy olive, the secondaries

especially; upper tail-coverts and tail brownish black; throat deep colonial buff, the breast more or less strongly shaded with citrine, passing into Martius yellow posteriorly; tibiæ buffy citrine; crissum old gold; under wing-coverts buffy yellow; inner margins of remiges buffy below; "iris brown; feet dark plumbeous; bill black, flesh-color below." Female similar, but the vertical spot wanting or merely indicated in buffy or ochraceous.

Measurements.—Male: wing, 64–69 (66); tail, 53–61 (57); bill, 10–11 (10.4); tarsus, 15.5–18 (16.4). Female (seven specimens); wing, 58–61 (60); tail, 51–54 (52); bill, 10–10.5 (10.3); tarsus, 13.5–17 (14.8).

Range.—Guiana, west through central and southern Venezuela to Colombia (east of the Andes), and south to the north bank of the Amazon and through upper "Amazonia" to eastern Peru.

Remarks.—The "Barbichon de Cayenne," male, of Buffon and D'Aubenton is the basis of Gmelin's name for this species, the figure being easily recognizable. Latham and Stephens, the next authors to notice the species, merely copied Buffon's account. So far as we know Swainson had no specimens of this form before him when he made it the type of his new genus *Tyrannula*, but only of the Brazilian bird (*mastacalis*). Cabanis, who in due course had access to examples collected by Schomburgk in British Guiana, is the first author to clearly recognize the distinctness of the present bird. Whitely also secured specimens in British Guiana, and in more recent years numerous other specimens have been taken in French and Dutch Guiana, Venezuela, and thence westward to the foot of the Andes in Colombia. Without having examined the specimens on which the records are based it is impossible to be sure, of course, but we are inclined to place the records for northeastern Peru here rather than under *M. atricaudus*, mainly on geographical grounds. The measurements for one of the specimens given by Taczanowski indicate a bird of the present form, and not *atricaudus*, which averages smaller. The wing-measurement of the other specimen, given as "59" millimeters, may be an error for 69. It is extremely unlikely that *atricaudus* would be found on both sides of the Andes in Peru, judging by analogy. For Brazil, Mr. Hellmayr finds that Natterer's specimens from Marabitanas on the Rio Negro and from Borba on the lower Rio Madeira belong here. A specimen, easily referable to this form, from Avojutuba, on the Rio Negro, appears to confirm the Marabitanas record, but we may be excused for venturing to doubt the Borba record in view of the range of variation known to obtain in *M. mastacalis*. It is more likely that the Rio Madeira separates the respective ranges of *mastacalis* and *barbatus*, but further field-work alone can demonstrate this. Miss Snethlage has recorded two specimens from Bom Lugar, on the Rio Purús, which from the description are almost certainly *barbatus*. The indications are, therefore, that this form has an extensive range in northern South America, from Guiana on the east to Colombia and Peru on the west. Individual variation is very much less than in *mastacalis*, from which the present form may always be told by its much brighter yellow rump and under surface, which latter is shaded with citrine, not buffy or old gold.

Specimens examined.—Colombia: La Murelia, Caqueta, 1. Venezuela: Rio Yuruan, 3; Suapure, 2. British Guiana: Mount Roraima, 3; Camacusa, 1; unspecified, 1. French Guiana: Tamanoir, 16; Pied Saut, 4. Brazil: Obidos, 4; Colonia do Veado, Obidos, 1; St. Antonio do Cachoeira, 1; Manacapuru, 1; Avojutuba, Rio Negro, 1. Total, 39.

Myiobius semiflavus Todd.

Myiobius semiflavus Todd, Proc. Biol. Soc. Washington, XXXII, 1919, 114 (El Tambor, Santander, Colombia; orig. descr.; type in coll. Carnegie Mus.).

Description.—Male: above plain olive green, the pileum with a partially concealed vertical spot of empire yellow, the rump pale lemon yellow; wings dusky, the remiges margined externally with buffy citrine, most conspicuous basally and on the secondaries; upper tail-coverts and tail dull black; beneath (including under wing-coverts) pale lemon yellow, the throat and crissum still paler (Martius yellow), the breast and sides shaded with pyrite yellow or yellowish citrine; tibiæ usually more or less shaded with citrine; inner margins of remiges buffy below; "iris brown; feet pale leaden blue; bill black, flesh-color below." Female similar, but the vertical spot wanting or merely indicated.

Measurements.—Male (four specimens): wing, 65–68 (66); tail, 53–59 (56.5); bill 11–12 (11.5); tarsus, 17–18.5 (17.5). Female (three specimens): wing, 62–64 (63); tail, 51–56 (54); bill, 10.5–11 (10.7); tarsus, 15–17 (16).

Range.—Known only from the type-locality, in the valley of the Rio Lebrija, northeastern Colombia.

Remarks.—This species is easily distinguished by its generally rich coloration and decidedly yellow under parts, which are much brighter than in any other form of this group. Although perfectly distinct, it seems to be most closely related to *M. barbatus*, and may have been developed therefrom by isolation. Certainly it has nothing to do with *M. atricaudus*, one of whose forms it approximates geographically. It is known at present only from the seven specimens listed below, but will probably be found to have a more extensive range, covering perhaps the whole of the valley of the middle Magdalena.

Specimens examined.—Colombia: El Tambor, 7.

Myiobius sulphureipygius sulphureipygius (Sclater).

Tyrannula sulphureipygia Sclater, Proc. Zool. Soc. London, "1856," 1857, 296 (Cordova, Vera Cruz, Mexico; orig. descr.; type now in coll. Brit. Mus.).

Myiobius citrinopygus Cabanis and Heine, Mus. Heineanum, II, 1859, 67, note (Mexico; new name for *Tyrannula sulphureipygia* Sclater, on grounds of purism).—Heine and Reichenow, Nom. Mus. Heineani Orn., 1883, 144 (Mexico; syn.).

Myiobius sulphureipygius Sclater, Proc. Zool. Soc. London, 1859, 45 (range), 384 (Playa Vicente, Oaxaca, Mexico).—Sclater, Ibis, 1859,

442 (Cordova, Mexico).—Salvin and Sclater, Ibis, 1860, 399 (Choctum, Guatemala).—Sclater, Proc. Zool. Soc. London, 1860, 465 (ref. orig. descr.; syn.; range).—Sclater, Cat. Am. Birds, 1862, 226 (Cordova, Mexico, and Choctum, Guatemala).—Gray, Hand-List Birds, I, 1869, 359 (in list of species; range).—Sumichrast, Mem. Boston Soc. Nat. Hist., I, 1869, 557 ("tierra caliente," Vera Cruz, Mexico).—Sclater and Salvin, Nom. Av. Neotrop., 1873, 51, part (Mexico, in range).—Sclater, Cat. Birds Brit. Mus., XIV, 1888, 200, part (Mexican, Guatemalan, and British Honduras references and localities; descr.).—Salvin and Godman, Biol. Centr.-Am., Aves, II, 1889, 57, part (Mexican, Guatemalan, and British Honduras localities and references; descr.; crit.).—Salvin, Ibis, 1889, 360, and 1890, 87 (Cozumel I., Yucatan).—Lantz, Trans. Kansas Acad. Sci., "1897–98," 1899, 222 (Cayo, British Honduras).—Sharpe, Hand-List Birds, III, 1901, 131, part (range).

Myiobius sulphureipygia Dubois, Syn. Avium, I, 1902, 245, part (references; range; syn.).

Myiobius xanthopygus sulphureipygius Ridgway, Bull. U. S. Nat. Mus., No. 50, IV, 1907, 487, part (diag.), 490, part (descr.; range; meas.; references).—Bangs, Proc. New England Zool. Club, IV, 1908, 27, 28, in text (crit.)—Peters, Auk, XXX, 1913, 376 ("30 miles north of Camp Mengel," Quintana Roo, Mexico).

Myiobius sulphureipygius sulphureipygius Hellmayr, Proc. Zool. Soc. London, 1911, 1135, 1136 (range; crit.).

Description.—Above dull olive green, the pileum and nape more or less suffused with brownish, the former with a partially concealed vertical spot of light cadmium or lemon chrome; rump picric yellow or Martius yellow; upper tail-coverts and tail dull black; wings dusky, margined externally with buffy brown; throat dull white, shaded with yellow posteriorly; breast, sides of head and neck, and abdomen laterally strongly suffused with ochraceous or antimony yellow, leaving only the middle of the abdomen pale yellow (barium yellow); tibiæ brownish olive; crissum more or less buffy brown; "iris dark hazel; bill horn brown above, mostly whitish below; feet blue." (Female with the yellow vertical patch restricted, merely indicated, or wanting).

Measurements.—Male (seven specimens): wing, 64–69 (66); tail, 54–59 (56); bill, 10–12.5 (11.5); tarsus, 17–18 (17.5). Female (four specimens): wing, 59–63 (61); tail, 50–53 (52); bill, 10–10.5 (10.3); tarsus, 16–16.5 (16.3).

Range.—States of Vera Cruz and Oaxaca, Mexico, east and south to Yucatan, British Honduras, and Guatemala, in the Tropical Zone.

Remarks.—"The first specimens of this species sent to Europe were probably those obtained by Deppe at Valle Real in Mexico, which remained undescribed under Lichtenstein's MS. name, *M. mexicanus*, in the Berlin Museum. In 1856 Mr. Sclater received examples from M. Sallé which he named *M. sulphureipygius*, comparing the species with the allied *M. barbatus*. The range of this bird in Mexico appears to be extremely limited, and probably strictly confined to the hot low-lying forests of the

State of Vera Cruz. It also occurs on the island of Cozumel, whence Mr. Gaumer sent us a single specimen. It is found too in British Honduras and in some abundance in Northern Vera Paz in the heavily forested country, lying at an elevation of about 1500 feet above the sea" (Salvin and Godman).

We can not follow Mr. Ridgway in reducing this form to a race of the Brazilian *M. mastacalis*, from which it is widely separated geographically, and consider it as distinct a species as any of the other forms herein admitted to recognition. Its ochraceous under parts are a character shared by only one other species, *M. villosus*, and should entitle it to stand alone.

Specimens examined.—Mexico: Orizaba, Vera Cruz, 1; Buena Vista, Vera Cruz, 2; Teapa, Tabasco, 2. British Honduras: Manatee Lagoon, 3; Quamin's Creek, 1; Toledo District, 2; unspecified, 1. Guatemala: Choctum, Vera Paz, 3; unspecified, 7. Total, 22.

Myiobius sulphureipygius aureatus Bangs.

Myiobius sulphureipygius (not *Tyrannula sulphureipygia* Sclater) Cassin, Proc. Acad. Nat. Sci. Philadelphia, 1860, 144 (Rio Truando, Colombia).—Lawrence, Ann. Lyc. Nat. Hist. N. Y., VIII, 1863, 8 (Panama Railway, Panama).—Salvin, Proc. Zool. Soc. London, 1867, 148 (Santa Fé, Veragua).—Lawrence, Ann. Lyc. Nat. Hist. N. Y., IX, 1868, 114 (Angostura, Costa Rica).—von Frantzius, Journ. f. Orn., XVII, 1869, 308 (Costa Rica).—Salvin, Proc. Zool. Soc. London, 1870, 198 (Calobre, Bugaba, and Volcan de Chiriqui, Panama).—Sclater, Ibis, 1873, 373 (Chontales, Nicaragua).—Boucard, Proc. Zool. Soc. London, 1878, 64 (Naranjo, Costa Rica).—Nutting, Proc. U. S. Nat. Mus., VI, "1883, 1884, 402 (Los Sabalos, Nicaragua).—Zeledon, Proc. U. S. Nat. Mus., VIII, 1885, 108 (Costa Rica).—Zeledon, An. Mus. Nac. Costa Rica, I, 1887, 117 (Jiminéz, Rio Sucio, and Pozo Azul de Pirris, Costa Rica).—Sclater, Cat. Birds Brit. Mus., XIV, 1888, 200, part (Nicaragua, Costa Rica, and Panama localities and references).—Ridgway, Proc. U. S. Nat. Mus., X, 1888, 589 (Segovia River, Honduras).—Salvin and Godman, Biol. Centr.-Am., Aves, II, 1889, 57, part (Central American localities and references).—Cherrie, Expl. Zool. Rio Naranjo, 1893, 15 (Rio Naranjo ["quebrada de Tocori], Costa Rica; nesting).—Cherrie, Expl. Zool. en Costa Rica, 1891-2, 1893, 384 (Lagarto, Boruca, Terraba, and Buenos Aires, Costa Rica).—Underwood, Ibis, 1896, 438 (Volcano Miravalles, Costa Rica).—Underwood, Avifauna Costarriquena, 1899, 7 (Costa Rica).—Bangs, Auk, XVIII, 1901, 363 (Divala, Panama).—Bangs, Bull. Mus. Comp. Zool., XXXIX, 1903, 148 (Yaruca, Honduras).

Myiobius villosus (not of Sclater) Hartert, Nov. Zool., V, 1898, 488 (Chimbo and Cachavi, Ecuador).

Myiobius xanthopygus sulphureipygius Ridgway, Bull. U. S. Nat. Mus., No. 50, IV, 1907, 490, part (Central American references and localities; meas.).—Bangs, Auk, XIV, 1907, 302 (Boruca, Paso Real, and Pozo del Rio Grande, Costa Rica).—Stone, Proc. Acad. Nat. Sci. Philadelphia, 1918, 267 (Canal Zone, Panama).

Myiobius xanthopygus aureatus Bangs, Proc. New England Zool. Club, IV, 1908, 27 (Divala, Panama; orig. descr.; type now in coll. Mus. Comp. Zool.; crit.).

Myiobius xanthopygius aureatus Carriker, Ann. Carnegie Mus., VI, 1910, 707 (Costa Rican localities and references; habits; nesting).

Myiobius sulphureipygius aureatus Hellmayr, Proc. Zool. Soc. London, 1911, 1135, in text (Chiriqui; Pozo Azul, Costa Rica; crit.), 1136 (range). —Chapman, Bull. Am. Mus. Nat. Hist., XXXVI, 1917, 466 (Alto Bonito, Choco, Baudo, Novita, Juntas de Tamana, San José, and Barbacoas, Colombia; Manavi, Ecuador; range; crit.).

Myiobius sulphureipygius villosus (not of Sclater) Hellmayr, Proc. Zool. Soc. London, 1911, 1135 (Nóvita, Colombia; crit.).

Subspecific characters.—Similar to *Myiobius sulphureipygius sulphureipygius,* but color of breast and sides paler, and yellow of median under parts slightly clearer in tone and more extended posteriorly, particularly on the flanks and crissum.

Measurements.—Male: wing, 62–66 (64); tail, 52–55 (53); bill, 10–12 (11); tarsus, 16.5–18.5 (17.8). Female: wing, 56–68 (62); tail, 49–56 (52); bill, 10–11.5 (10.8); tarsus, 14.5–18.5 (16.7).

Range.—Honduras south through Colombia to Ecuador, west of the Andes.

Remarks.—No. 66,574, Collection Carnegie Museum, is a young bird emerging from juvenal dress. The upper parts, wings, etc., are barred with ochraceous buff feather-tips; the tertiaries have broad outer margins of buffy; the vertical spot and the yellow of the rump are wanting, and the under parts are paler, duller, and more tinged with buffy, with the flanks and crissum nearly white.

M. sulphureipygius aureatus is not a strongly marked subspecies, but may be recognized in series by the characters above specified. Examples from Honduras and Nicaragua are clearly intermediate, but on the whole seem best referred to the southern form. Birds from western Costa Rica are pale by comparison, while those from Ecuador are bright; this is in part due to season, however, and no further subdivision of the species is advisable. The present race was formally distinguished by Mr. Bangs in 1908, after Mr. Ridgway had pointed out its characters. It occurs throughout much of the territory occupied by *M. atricaudus,* but in somewhat different haunts. In Costa Rica, according to Mr. Carriker, it is found "up to an altitude of about 3,000 feet on the Caribbean slope and 2,000 feet on the Pacific. It is found only in the forest, usually near a little brook, flitting about among the low limbs of the trees and shrubbery. The birds are very silent; in fact I do not think I have ever heard them utter more than a faint chirp." The same author describes the nest as a "purse-shaped mass of grass, roots and bark-fibres, about eighteen inches long, very slender at the upper end and about three and one-half inches in diameter at the largest part (about four inches from the bottom). The entrance to the cavity of the nest is on one side, four inches from the bottom and protected by an overhanging flap of the material of the nest.

The eggs are invariably two in number, creamy white, sometimes with a roseate tinge, and thickly speckled, streaked, and scrawled over the entire surface with bright chestnut-rufous, heavier at the larger end, in the form of a wreath or cap. Sometimes the markings have a decided purplish color." The nest is always suspended from a slender vine or the tip of a branch over water.

Specimens examined.—Honduras: Yaruca, 1; Segovia River, 1; Rio de las Piedras, 1. Nicaragua: Los Sabalos, 4; Rio Tuma, 1; Tuma, 2; Rio Grande, 1; Savala, 1; Las Canas, 2; Pena Blanca, 2. Costa Rica: Pozo Azul de Pirris, 10; Escazu(?), 1; Guapiles, 3; Volcano Turrialba, 1; Guacimo, 2; Rio Sicsola, 1; Miravalles, 1; El Hogar, 2; El Pozo de Terraba, 2; Boruca, 17; Buenos Aires, 1; La Concepcion, Jimenez, 1; Jimenez, 2; Bonilla, 1; Angostura, 2; Naranjo, 1; Tenorio, 4; La Vijagua, 8; El General, 13; Paso Real, 2; Carrillo, 3; Cariblanco de Sarapiqui, 2; Pozo del Rio Grande, 12. Panama: Divala, 2; Chiriqui, 1; Tacarcuna, 5; El Real, Rio Tuyra, 4; Cana, 1; Tapalisa, 1; Cerro Azul, 1; Cituro, Cuppe River, 1; Mt. Pirri, 1; unspecified, 1. Colombia: Murindo, 2; Quibdo, 1; El Tambo, 3; Andagoya, 3; Potedo, 3; Malagita, 3; Alto Bonito, 3; Baudo, Choco, 1; Choco, 2; Barbacoas, 2; San Jose, Cauca, 1; Juntas de Tamana, Cauca, 2; Novita, Cauca, 2. Ecuador: Junction Chanchan and Chiguancay Rivers, 2; Bucay, Guayas, 2; Naranjo, Guayas, 1; Santa Rosa, Oro, 1; Rio de Oro, Manavi, 4. Total, 164.

Myiobius villosus villosus Sclater.

Myiobius villosus Sclater, Proc. Zool. Soc. London, 1860, 93 (Nanegal [type-locality] and Rio Napo[?], Ecuador; orig. descr.; type now in coll. British Mus.), 465 (ref. orig. descr.; range).—Sclater, Cat. Am. Birds, 1862, 226 (Nanegal and Rio Napo, Ecuador; ref. orig. descr.).—Gray, Hand-List Birds, I, 1869, 359 (in list of species; range).—Giebel, Thes. Orn., II, 1875, 668 (ref. orig. descr.).—Sclater and Salvin, Proc. Zool. Soc. London, 1879, 514 (Frontino, Antioquia, Colombia; crit.).—Taczanowski and von Berlepsch, Proc. Zool. Soc. London, 1885, 91 (Machay and Mapoto, Ecuador), 116 (Nanegal, Ecuador).—Sclater, Cat. Birds Brit. Mus., XIV, 1888, 201, part (Nanegal and Rio Napo, Ecuador; Frontino and "Bogotá," Colombia; descr.; references; crit.). Salvadori and Festa, Bol. Mus. Zool. ed Anat. Comp. Torino, XIV, No. 362, 1899, 10 ("Foreste del Rio Peripa," Ecuador; Ecuadorean references; crit.)—Sharpe, Hand-List Birds, III, 1901, 131, part (range). —Goodfellow, Ibis, 1901, 706 (Gualea, Ecuador; crit.).—Gœldi, Bol. Mus. Paraense, III, 1902, 292, part (Rio Napo, Ecuador, ex Sclater). —Menegaux, Mission Service Geog. Mes. Arc Méridien Equat. Amer. du Sud, IX, i, 1911, B 56 (Mindo, Ecuador; Ecuadorean records).—Brabourne and Chubb, Birds S. Am. I, 1912, 296, part (ref. orig. descr.; range).—Chapman, Bull, Am. Mus. Nat. Hist., XXXVI, 1917, 465, excl. extralimital records (Cocal and Ricaurte, Colombia; range; crit.).

Myiobius sulphureipygia var. *villosa* Dubois, Syn. Avium, I, 1902, 245 part (references; range).

Myiobius xanthopygus villosus Ridgway, Bull. U. S. Nat. Mus., No. 50, IV, 1907, 488, part (diag.; references; crit.).—Bangs, Proc. New England Zool. Club, IV, 1908, 27, in text (crit.; range).

Myiobius sulphureipygius villosus von Berlepsch, Ornis, XIV, 1907, 481, (crit.).—Hellmayr, Proc. Zool. Soc. London, 1911, 1136, part (range).

Description.—Male: above dark olive green, the pileum more or less suffused with Brussels brown, and with a large median vertical spot or stripe (partially concealed) of lemon chrome; rump Martius yellow; upper tail-coverts and tail black; wings dusky brownish, the coverts and remiges edged externally with medal bronze, the inner margins of the remiges buffy; under surface orange citrine, brightest on the breast and sides, the throat yellowish, and the middle of the abdomen barium yellow; "iris brown; feet grayish brown; bill black, flesh color below." Female similar to the male, but lacks the yellow vertical spot, the pileum being Brussels brown with a dark olive green wash.

Measurements.—Male (three specimens): wing, 70–71; tail, 60–61; bill, 11.5-12; tarsus, 18. Female (four specimens): wing, 66–68 (67); tail, 56–61 (58); bill, 11–12 (11.5); tarsus, 16–18 (17).

Range.—Andes of Colombia and Ecuador, in the Subtropical Zone.

Remarks.—*Myiobius villosus* is the Subtropical Zone representative of *M. sulphureipygius*, as conclusively shown by Dr. Chapman. It differs from the latter in its larger size and generally darker coloration, the yellow below being more restricted and the ochraceous more extended. Nearly all the specimens examined show an indistinct dusky mottling on the lower parts, from the breast down. Although closely related to the form of the Tropical Zone living immediately below, intergradation apparently does not take place, and it should be accorded specific rank. Sclater's type came from Nanegal, in western Ecuador, while a second specimen purported to have come from the Rio Napo, in eastern Ecuador—almost certainly an erroneous locality. We have not yet seen any specimens from western Ecuador, but there is every reason to believe that skins from western Colombia are the same. Dr. Chapman calls attention to the peculiarities of a "Bogotá" skin in the American Museum Collection (No. 42704). This specimen agrees closely with No. 59984, Collection Carnegie Museum, from Rio Negro, Colombia, and the two together differ from the remainder of the series in their brighter coloration below. Two forms are thus indicated, from the Eastern and Western Andes respectively, but it will be wise to await the receipt of additional material before formally characterizing them. The Peruvian birds, however, are undoubtedly distinct, and are described beyond. The present bird is not nearly so common or well known as the forms of this group from the Tropical Zone, nor, indeed, as many other Subtropical species.

Specimens examined.—Colombia: Rio Negro, 1; "Bogotá," 1; Cocal, Cauca, 1; Ricaurte, Narino, 2; near Pavas, 2. Total, 7.

Myiobius villosus peruvianus, subsp. nov.

Myiobius villosus (not of Sclater, 1860) Sclater and Salvin, Proc. Zool. Soc. London, 1879, 615 (Tilotilo, Yungas, Bolivia).—Taczanowski,

Proc. Zool. Soc. London, 1882, 21 (Huambo, Peru).—Taczanowski, Orn. Perou, II, 1884, 299 (Amable-Maria and Huambo, Peru; descr.; references; habits).—Sclater, Cat. Birds Brit. Mus., XIV, 1888, 201, part (Tilotilo, Yungas, Bolivia).—Sharpe, Hand-List Birds, III, 1901, 131, part (range).—von Berlepsch and Stolzmann, Proc. Zool. Soc. London, 1902, ii, 58 (Amable-Maria, Peru).—Gœldi, Bol. Mus. Paraense, III, 1902, 292, part (Yungas, Bolivia, ex Sclater).—von Berlepsch and Stolzman, Ornis, XIII, 1906, 113 (Rio Cadena, Peru).—Brabourne and Chubb, Birds S. Am., I, 1912, 296, part (Peru and Bolivia, in range).—Chapman, Bull. Am. Mus. Nat. Hist., XXXVI, 1917, 465, part (Inca Mine, Peru).—Bangs and Noble, Auk, XXXV, 1918, 455 (Perico, Peru).

Myiobius xanthopygius (not *Platyrhynchus xanthopygus* Spix) Taczanowski, Proc. Zool. Soc. London, 1874, 537 (Amable-Maria, Peru).

Myiobius sulphureipygia var. *villosa* Dubois, Syn. Avium, I, 1902, 245, part (references; range).

Myiobius xanthopygus villosus Ridgway, Bull. U. S. Nat. Mus., No. 50, IV, 1907, 488, part (references).

Type, No. 132,749, Collection American Museum of Natural History, adult male; Rio Tavara (1600 feet), Peru, June 9, 1915; H. and C. Watkins.

Subspecific characters.—Similar in general to *Myiobius villosus villosus* Sclater of Ecuador and Colombia, but conspicuously duller and paler throughout, the upper parts not quite so green, and the rump paler, more baryta yellow; under parts much duller, nearer old gold than orange citrine, with the median yellow very pale, near napthalene yellow.

Measurements.—Male (three specimens): wing, 68–71 (70); tail, 60–63 (62); bill, 11–12 (11.5); tarsus, 18–19 (18.5). Female (one specimen): wing, 67; tail, 58; bill, 12; tarsus, 18.

Range.—Andes of Peru and Bolivia (south at least to Yungas), in the Subtropical Zone.

Remarks.—This form differs from true *villosus* in the same way, and to an even greater detree, as does true *sulphureipygius* from its southern race *aureatus*. According to Stolzmann it has not been found below 3700 feet, but the specimen selected as type is marked as having been collected at 1600 feet, which, if correct, would indicate that the bird descends to a lower altitude than do most Subtropical Zone forms. Buckley secured it in the province of Yungas in Bolivia, but all the other published records are for Peru. Where it meets the range of the typical form we are unable to state; perhaps some of the Ecuador references may pertain here also.

Specimens examined.—Peru: Inca Mine, 1; Perico, 1; Rio Tavara (1600 feet), 1; Santo Domingo, 1. Total, 4.

Myiobius atricaudus modestus Todd.

Myiobius barbatus atricaudus (not *Myiobius atricaudus* Lawrence) von Berlepsch and Hartert, Nov. Zool., IX, 1902, 49, excl. extralimital references (Caicara, Venezuela; crit.).

Myiobius modestus Todd, Ann. Carnegie Mus., VIII, 1912, 207 (Upata [type-locality], San Felix, and Altagracia, Venezuela; orig. descr.; type in coll. Carnegie Mus.; crit.).—Cherrie, Mus. Brooklyn Inst. Sci. Bull., II, 1916, 242 (Caicara and River San Feliz, Venezuela).

Subspecific characters.—Similar to *Myiobius atricaudus atricaudus*, but upper parts paler, and lower parts duller, more uniformly buffy, less yellowish.

Measurements.—Male (two specimens): wing, 60–62; tail, 59–60; bill, 10.5–11; tarsus, 17–18. Female (six specimens): wing, 57–58 (57); tail, 54–57 (56); bill, 10–10.5 (10); tarsus, 15–16.5 (15.5).

Range.—Eastern Venezuela, south of the Orinoco River, east to the Sierra Imataca.

Remarks.—"This form is based upon two adult [male] and three immature [=female] birds from San Felix, Altagracia, and Upata, localities in the region lying immediately south of the Orinoco east of Ciudad Bolivar. These are evidently the same as the two skins from Caicara (farther up the Orinoco) doubtfully referred to *Myiobius barbatus atricaudus* Lawrence by Messrs. Berlepsch and Hartert (*Novitates Zoologicæ*, IX, 1902, 49). Upon comparison with an ample series of the latter from Costa Rica, however, they prove to be very distinct, being decidedly paler olivaceous above, and more uniform below, with less of the buffy suffusion on the breast and sides, and the tibiæ and under tail-coverts much paler, more buffy. From true *M. barbatus*, of which I have three examples before me, they are still more different, and may be distinguished at a glance by their deep black tails" (Todd, l. c.).

With a much larger series of true *atricaudus* at hand than was available when the above remarks were penned, it is evident that some qualifications are required. *M. modestus* is more closely related to *M. atricaudus* than at first was thought, and should stand as a subspecies thereof. It differs in its lighter, duller coloration, the lower parts appearing less yellowish, and more uniformly buffy, with the upper parts a shade paler also. In the original description it is stated that there is "less of the buffy suffusion on the breast and sides" than in *atricaudus*, but the fact is that this is only apparent because of the dullness of the yellow color.

Since the respective ranges of *M. barbatus* and the present form are known to approach each other very closely in Venezuela, if, indeed, they do not actually overlap, without any signs of intergradation in the area involved, we feel justified in keeping them specifically distinct. Two specimens from Caicara, collected by Mr. Cherrie, and examined by the writer in this connection, confirm his suspicions as to the identity of the birds from this locality referred to by Messrs. von Berlepsch and Hartert.

Specimens examined.—Venezuela: San Felix, 2; Upata, 2; Altagracia, 1; Caicara, 2; La Cascabel, Rio San Feliz, 1. Total, 8.

Myiobius atricaudus suffusus Todd.

Myiobius modestus suffusus Todd, Proc. Biol. Soc. Washington, XXX, 1917, 4 (Turbaco, Colombia; orig. descr.; type in coll. Carnegie Mus.).

Subspecific characters.—Similar to *Myiobius atricaudus atricaudus* Lawrence, but under parts paler and more uniform, with less buffy suffusion on the breast; upper surface also slightly paler.

Measurements.—Male (four specimens): wing, 60–62 (61); tail, 56–58 (57); bill, 10–11 (10.5); tarsus, 18–19 (18.5). Female (three specimens): wing, 55–57 (56); tail, 54–57 (55); bill, 9.5–10 (10); tarsus, 16–16.5 (16).

Range.—Valley of the Rio Sinu east to the valley of the middle Rio Magdalena, Colombia.

Remarks.—In the light of the much larger series of true *atricaudus* examined in this connection the characters originally ascribed to this form assume somewhat less importance. It is in fact a barely recognizable race of *atricaudus*, differing in its paler, less buffy coloration below, and paler upper parts, in which latter respect it agrees with *modestus*. It appears to be confined to the northern part of the area occupied by the Cauca-Magdalena Fauna in Colombia (as defined by Dr. Chapman), since a specimen from Malena, farther up the Magdalene Valley, is clearly referable to *atricaudus*.

Specimens examined.—Colombia: Turbaco, 5; Gamarra, 1; Aguachica, 1. Total, 7.

Myiobius atricaudus atricaudus Lawrence.

Myiobius barbatus (not *Muscicapa barbata* Gmelin) Sclater, Proc. Zool. Soc. London, 1860, 282 (Babahoyo, Ecuador), 295 (Esmeraldas, Ecuador).—Lawrence, Ann. Lyc. Nat. Hist. N. Y., VII. 1861, 328 (Panama Railway, Panama).—Sclater, Cat. Am. Birds, 1862, 225, excl. references part (Esmeraldas and Babahoyo, Ecuador).—Taczanowski, Proc. Zool. Soc. London, 1877, 332 (Palmal, Ecuador).—Sclater and Salvin, Proc. Zool. Soc. London, 1879, 514 (Santa Elena, Antioquia, Colombia; crit.).—Heine and Reichenow, Nom. Mus. Heineani Orn., 1883, 144 (Babahoyo, Ecuador).—Taczanowski and von Berlepsch, Proc. Zool. Soc. London, 1885, 118 (Babahoyo and Esmeraldas, Ecuador, ex Sclater).—Salvin and Godman, Biol. Centr.-Am., Aves, II, 1889, 56, part Costa Rica and Panama references and localities; crit.).—Underwood, Avifauna Costarriquena, 1899, 7 (Costa Rica).—Salvadori and Festa, Bol. Mus. Zool. ed Anat. Comp. Torino, XIV, No. 362, 1899, 10 ("Foreste del Rio Peripa," Ecuador; Ecuadorean references).—Gœldi, Bol. Mus. Paraense, III, 1902, 292 (Sarayacu, Ecuador, ex Sclater).

Myiobius atricaudus Lawrence, Ibis, 1863, 183 (Panama; orig. descr.; types now in coll. Am. Mus. Nat. Hist.).—Lawrence, Ann. Lyc. Nat. Hist. N. Y., VIII, 1863, 8 (Panama Railway, Panama; crit.).—Sclater and Salvin, Proc. Zool. Soc. London, 1864, 360 ([Lion Hill?], Panama; crit.).—Salvin, Proc. Zool. Soc. London, 1870, 198 (Calovevora, Panama).—Giebel, Thes. Orn., II, 1875, 663 (ref. orig. descr.; range).—Sclater and Salvin, Proc. Zool. Soc. London, 1879, 514 (crit.).—Ridgway, Proc. U. S. Nat. Mus., V, 1882, 396, note ("La Palma," Costa Rica, and Panama; crit.).—Nutting, Proc. U. S. Nat. Mus., V, 1882, 396 ("La Palma," Costa Rica).—Zeledon, Proc. U. S. Nat. Mus., VIII, 1885, 108 (Costa Rica).—Zeledon, An. Mus. Nac. Costa Rica,

I, 1887, 117 (Costa Rica).—Bangs, Proc. New England Zool. Club, II, 1900, 22 (Loma del Leon [Lion Hill], Panama).—Todd, Ann. Carnegie Mus., VIII, 1912, 208, in text (crit.).—Brabourne and Chubb, Birds S. Am., I, 1912, 296 (ref. orig. descr.; range).

Myiobius atricauda Gray, Hand-List Birds, I, 1869, 359 (in list of species; range).—Sharpe, Hand-List Birds, III, 1901, 131 (range).—Thayer and Bangs, Bull. Mus. Comp. Zool., XLVI, 1906, 219 (savanna of Panama).—von Berlepsch, Ornis, XIV, 1907, 481, in text (crit.).

[*Myiobius barbatus*] a. subsp. *atricauda* Sclater, Cat. Birds Brit. Mus., XIV, 1888, 200, part (localities and references for Panama, Colombia, and Ecuador; crit.).

Myiobius barbatus atricaudus von Berlepsch and Hartert, Nov. Zool., IX, 1902, 49, part (Costa Rica; crit.).—Hellmayr, Abhand. K. Bayerischen Akad. Wiss., II Kl., XXII, 1906, 642 (Paraiso, Panama; S. Javier and Pambilar, Ecuador; diag.; meas.; range).—Ridgway, Bull. U. S. Nat. Mus., No. 50, IV, 1907, 487 (diag.), 488, excl. extralimital localities and references part (descr.; range; meas.; references).—Carriker, Ann. Carnegie Mus., VI, 1910, 708 (Costa Rican localities and references; habits).—Hellmayr, Proc. Zool. Soc. London, 1911, 1135, 1136 (range; crit.).—Chapman, Bull. Am. Mus. Nat. Hist., XXXVI, 1917, 465 (Dabeiba, Caldas, Barbacoas, Rio Frio, and Malena, Colombia; range).—Stone, Proc. Acad. Nat. Sci. Philadelphia, 1918, 267 (Gatun, Panama; nesting).

Myiobius barbatus var. *atricauda* Dubois, Syn. Avium, I, 1902, 245 (ref. orig. descr.; range).

Myiobius barbatus atricauda Bangs, Auk, XIV, 1907, 302 (Boruca and Pozo del Rio Grande, Costa Rica).

Description.—Above between olive green and dark citrine, the pileum slightly darker, and with a partially concealed vertical spot of lemon chrome; rump Martius yellow; wings dusky, with outer margins of olive green and pale grayish inner margins below; upper tail-coverts and tail black; under surface barium yellow, the throat, breast, sides, tibiæ, and crissum more or less strongly shaded with old gold or honey yellow; "iris brown, feet leaden blue; bill black, flesh-colored below." (Female with the yellow vertical spot restricted or wanting).

Measurements.—Male: wing, 56–62 (59); tail, 55–60 (58.5); bill, 9.5–11 (10.3); tarsus, 16.5–18 (17.5). Female: wing, 52–57 (55); tail, 53–59 (56); bill, 9.5–10 (9.6); tarsus, 14.5–17 (16).

Range.—Western Costa Rica (Gulf of Nicoya) southward through Panama and through western Colombia and Ecuador to northwestern Peru.

Remarks.—The proper status of the present bird has been the subject for considerable discussion in the past. Described by Lawrence in 1863 from Panama specimens, it was soon discovered to be the same form as had already been recorded as *barbatus* from western Ecuador. With a restricted representation of both forms before them, Salvin and Godman in 1889 could find "no material difference" between birds from Panama and those

from Guiana. Sclater in 1888 had admitted the former as a subspecies, but with reservations. Mr. Ridgway and Mr. Hellmayr agree in making *atricaudus* a subspecies of *barbatus*, and this course has been followed by other recent authors. If it were only a question of the color of the tail such a treatment might be indorsed, but there are other differences. In *atricaudus* the upper parts are tinged with citrine, the yellow vertical spot is smaller and very slightly paler, and the yellow of the rump is more extended than in *barbatus*. Below the yellow color is a little deeper, and the breast and sides are shaded with honey yellow or old gold, instead of citrine, as in *barbatus*. Moreover, the proportions are different, *atricaudus* having the tail equal to or even longer than the wing, and obviously rounded, while in *barbatus* it is decidedly shorter, and nearly even. Taking all these facts into consideration, and bearing in mind that in Venezuela a race of *atricaudus* approximates and probably overlaps *barbatus* in range, we are disposed to accord the present bird specific rank, believing that it is fully as much entitled to such treatment as certain other forms whose status is not in question.

M. atricaudus atricaudus ranges in the Tropical Zone from western Costa Rica to northwestern Peru (Tumbez), west of the Andes, but invading the Cauca and Magdalena Valleys in Colombia. It is a forest-dweller, according to Mr. Carriker "always seen rather high up in the trees, flitting from branch to branch much like a warbler or some of the vireos, and usually has its tail considerably spread, which distinguishes it at once [from *M. sulphureipygius aureatus*] by its greater length and blackness. This species is also usually seen farther away from creeks and streams than the other, sometimes high up in the crest of a ridge, far from any water, a situation in which I have never seen *aureatus*." Dr. Stone describes a nest collected by the late L. L. Jewel as a "pendant bell-shaped structure with entrance beneath the passage going up and over into the nest cavity; made of dead leaves and fine vegetable fiber, lined with vegetable silk and fine fibers. Situated on a branch overhanging a stream in the forest. Eggs two, rich deep rufous, wreathed about the larger end with deeper shade of the same, .65 x .50 in."

Specimens examined.—Costa Rica: Pozo Azul de Pirris, 4; Boruca, 12; Buenos Aires, 4; Pozo del Rio Grande, 3; El General, 2; La Palma, 1. Panama: Panama, 4; Divala, 1; Loma del leon (Lion Hill), 3; Gatun, 7; Natá-Coclé, 1; Chiriqui, 3; Boqueron, 2; La Chorrera, 1; El Real, Rio Tuyra, 1; Tabernilla, 3; Porto Bello, 1; Corozal, 1; Matachin, 1; Miraflores, 1; unspecified, 2. Colombia: Caldas, 3; Yumbo, 9; Barbacoas, 2; Malena, 1; Rio Frio, 1; Dabeiba, 1. Ecuador: Bucay, Guayas, 4; Esmeraldas, 5; Rio de Oro, 2; Naranjo, 2; Puna Island, 1; Duran, Guayas, 1; Zamora, Loja, 1. Peru: Tumbez, 1. Total, 92.

Myiobius ridgwayi von Berlepsch.

Myiobius xanthopygius (not *Platyrhynchus xanthopygus* Spix) von Pelzeln, Orn. Bras., ii, 1869, 113, part (Luiz d'Almeida and Ypanema, Brazil; meas.; crit.).

Myiobius ridgwayi von Berlepsch, Auk, V, 1888, 457 (Petropolis, Prov. Rio Janeiro, Brazil; orig. descr.; type in coll. H. von Berlepsch; crit.).—Sharpe, Hand-List Birds, III, 1901, 131 (ref. orig. descr.; range).—Hellmayr, Abhand. K. Bayerischen Akad. Wiss., II Kl., XXII, 1906, 643 (Victoria, Brazil; von Pelzeln's records; meas.; crit.).—Ridgway, Bull. U. S. Nat. Mus., No. 50, IV, 1907, 488, excl. syn. part? (diag.; ref. orig. descr.).—von Ihering, Aves do Brazil, 1907, 290 (Brazilian localities and references).—von Berlepsch, Ornis, XIV, 1907, 481 (crit.).—Todd, Ann. Carnegie Mus., VIII, 1912, 208, in text (crit.).—Brabourne and Chubb, Birds S. Am., I, 1912, 296 (ref. orig. descr.; range).

Myiobius barbatus var. *ridgwayi* Dubois, Syn. Avium, I, 1902, 245 (ref. orig. descr.; range).

Description.—Male: above light brownish olive; small vertical spot pale lemon yellow; rump yellowish buff (near mustard yellow); tail (with sometimes longer upper coverts) dull black; wings dusky brown with more or less brownish olive edgings; below (including under wing-coverts) yellowish buff, almost uniform, but deepening a little on the crissum; inner edges of remiges below more or less buffy. Female similar, but the vertical spot (usually?) wanting.

Measurements.—Male (two specimens): wing, 58–59; tail, 58–59; bill, 10–10.5; tarsus, 16–16.5. Female (one specimen): wing, 55; tail, 56; bill, 10.

Range.—Southern Brazil, in the provinces of São Paulo, Rio de Janeiro, and Espirito Santo.

Remarks.—This is a very distinct species, readily known by its uniform buffy yellow rump and lower parts. These peculiarities were first remarked by von Pelzeln in the case of three specimens collected by Natterer at Ypanema and Luiz d'Almeida, southern Brazil, but the species as such remained unrecognized and undescribed until 1888, when von Berlepsch formally characterized it on the strength of a specimen in his own collection from Petropolis (near Rio Janeiro), Brazil, and another in the collection of the U. S. National Museum without exact locality, but probably from the same general region. In 1906 Mr. Hellmayr discovered that the specimens referred to as different by von Pelzeln many years before really belonged to the present species. Mr. Ridgway refers several more recent records by von Ihering here also, but inasmuch as this author discriminates between *ridgwayi* and *mastacalis* in his work on the Birds of Brazil we are inclined to accept his determination. Little is known of the present species, and very few specimens appear to be extant. While its range is known to be included in that of *Myiobius mastacalis*, it does not yet appear whether the two species are actually found together, or whether *M. ridgwayi* occupies the higher and *M. mastacalis* the lower levels. It seems to be more closely related to *M. atricaudus* than to any other form of this generic group.

Specimens examined.—Brazil: Petropolis, 1; Therezopolis, Organ Mountains, 1; unspecified, 2. Total, 4.

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PROCEEDINGS

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DESCRIPTION OF A BRACHYSPIZA FROM THE CHACO OF ARGENTINA AND PARAGUAY.

BY ALEXANDER WETMORE.

During a review of the more southern forms of the South American song sparrow, incident to the identification of a series of specimens collected by the writer during 1920 and 1921, a subspecies previously undescribed has been recognized from the region known as the Chaco. Its characters may be known from the following diagnosis.

Brachyspiza capensis mellea, subsp. nov.

Characters.—Similar to *Brachyspiza capensis argentina* Todd but paler; underparts mainly white with no distinct wash of gray on breast; sides and flanks much lighter, more buffy; brown half collar on hindneck lighter; dorsal surface lighter particularly on rump, with dark longitudinal streaks somewhat more restricted.

Description.—Type, U. S. National Museum, Cat. No. 284146, adult male, collected 80 kilometres west of Puerto Pinasco, Paraguay, September 16, 1920, by Alex. Wetmore (orig. No. 5010). Median crown stripe moderately wide, grayer than pale mouse gray; superciliary stripe white with a wash of pale olive-gray, extended to base of bill where it is slightly expanded; basal feathers dull white with an admixture of black; auricular region pale mouse gray, indistinctly streaked with white; broad lateral crown stripes, line behind eye, another below auricular region and a spot on either side of breast black; a few hair-like black feathers above anterior canthus of eye; feathers on lower eyelid white, those below eye whitish mixed with black; collar on hindneck rather narrow, extended around to black spot on either side of breast, in color slightly duller than tawny; back, rump, upper tail-coverts and scapulars light grayish olive; back and scapulars streaked with black, with a distinct space between longitudinal streaks and brown collar on hindneck; external webs of scapulars bordered with avellaneous; flight feathers blackish brown; primaries edged narrowly with dull pale olive-buff; secondaries more broadly margined with avellaneous, almost white at tips; wing coverts blackish brown; lesser wing coverts margined with smoke gray; median wing coverts tipped with white forming

a wing band; greater wing coverts margined with avellaneous and tipped with white, the latter forming a second wing bar; tail brownish black, outer webs of feathers margined with dull pale olive-buff; under surface mainly white; sides paler than pale smoke gray, with a slight wash of cartridge buff; flanks washed with buffy brown.

Measurements (in millimeters).—Males (two specimens): Wing 69.9[1]–70.0, tail 56.2–57.8,[1] culmen 11.8[1]–12.2, tarsus 20[1]–21.2. Female (one specimen): Wing 64.0, tail 55.2, culmen 12.0, tarsus 20.5.

Range.—The Chaco region in Formosa, Argentina (Kilometre 182, northwest of Formosa) and Paraguay (west of Puerto Pinasco).

Remarks.—The present form of the widely spread South American song sparrow in its characters is suggestive of two subspecies that have been previously recognized, namely *Brachyspiza c. argentina* and *B. c. hypoleuca*. In the diagnosis sufficient explanation has been made of the manner in which *B. c. mellea* differs from the form first named, which ranges throughout the Pampan region of Argentina, and adjoins *mellea* on the south. From *B. c. hypoleuca* the subspecies here described as new differs in much grayer, less rufescent dorsal surface, and in the distinct space that separates the area of longitudinal stripes from the bright brown collar. In addition *mellea* is even whiter below than *hypoleuca*, has the sides of the neck grayer, and the sides and flanks paler, grayer, less bright in color. The two forms under discussion should meet somewhere along the western border of the Chaco.

[1]Type specimen.

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A NEW GENUS AND FOUR NEW SUBSPECIES OF AMERICAN BIRDS.

BY ALEXANDER WETMORE AND JAMES L. PETERS.

Examination of specimens collected during 1920 and 1921 in South America, in connection with older material already available, has shown several forms not currently recognized by ornithologists; further two species of tapaculos, usually associated in one genus are found to differ so strikingly as to merit their separation in distinct generic groups. Descriptions of a new genus for one of these, and of subspecies of the other birds in question follow.

Teledromas, gen. nov.

Characters.—Similar to *Rhinocrypta* Gray[1] but head not crested; bill relatively stronger and heavier; under tail-coverts equal to less than half the length of tail; hind toe with claw longer than second toe with claw.

Type.—*Rhinocrypta fusca* Sclater and Salvin,[2] which will now stand as *Teledromas fuscus* (Sclater and Salvin).

Remarks.—As the genus *Rhinomya* established in 1832 by Isidore Geoffroy and d'Orbigny for the species that they described[3] as *Rhinomya lanceolata* was antedated by *Rhinomya* Robineau-Desvoidy,[4] a genus of Diptera published in 1830, Gray in 1841 (l. c.) replaced it by *Rhinocrypta*, with *Rhinomya lanceolata* as the type and only species then known. Later Gistel[5] noted this same duplication of names, and, apparently unaware of Gray's action, proposed *Rhinornis* for *Rhinomya* of Isidore Geoffroy and d'Orbigny. All of these names refer to *Rhinocrypta lanceolata* and so far as we are aware no other generic names have been suggested in connection with the two birds under discussion.

Though the two species that have been included in the genus *Rhino-*

[1] List Gen. Birds, 1841, p. 25.
[2] Nom. Av. Neotr., 1873, p. 161 (Mendoza).
[3] Mag. Zool., 1832, cl. II, pl. 3.
[4] J. B. Robineau-Desvoidy, Essai sur les Myodaires, 1830, p. 123.
[5] Naturg. Thierreichs für Höh. Schul., 1848, p. x.

crypta are related, and have similar habits and habitat, they differ so trenchantly in structural characters that their separation is well warranted.

Dendrocygna bicolor helva, subsp. nov.

Characters.—Similar to *Dendrocygna bicolor bicolor* (Vieillot) but lighter and brighter in color on under surface; crown paler; bill smaller, narrower, greatest width not more than 19.8 mm.

Description.—Type, U. S. National Museum, Cat. No. 135588, adult male, from Unlucky Lake, San Diego County, California, collected April 30, 1894, by Dr. E. A. Mearns. Top of head between russet and mars brown, with a slight wash of dark mouse gray on posterior portion; sides of head and of upper neck tawny-olive, each feather margined with buffy brown, producing an appearance of faint streaks, the basic color merging above with color of crown; hind-neck with a broad streak of black, bordered by tawny-olive; sides of neck and foreneck lighter than pale olive-buff, the feathers on the middle of foreneck and sides of neck dusky neutral gray basally and laterally, producing an appearance of fine, dark, poorly defined lines, arranged as a half collar; base of hind neck and upper back verona brown, tipped with cinnamon-buff, feathers of upper back indistinctly darker in a line marking prolongation of black neck stripe; back and wings in general dull black, feathers of back and scapulars tipped broadly with verona brown, changing distally to cinnamon-buff; lesser and middle wing-coverts, save on outer portion russet, outer coverts of these two series black, tipped slightly with russet; greater wing-coverts, primaries, secondaries, lower back and center of rump black; sides of rump, and lateral upper tail-coverts, light buff; central upper tail-coverts nearly white; rectrices dull black; throat, chin and upper foreneck dull white, washed more or less with cinnamon-buff; lower foreneck and upper breast clay color becoming sayal brown on lower breast, sides and abdomen, the feathers tipped indistinctly with cinnamon-buff; under tail-coverts dull white, washed laterally with pinkish buff; an indistinct white line through center of abdomen; feathers of tibiae streaked with ivory yellow; under wing-coverts and axillars blackish mouse gray; feathers of sides and flanks long, streaked broadly with dull ivory yellow, the light streaks bordered indistinctly with olivaceous-black. Bill, tarsus and toes dull black (from dried skin).

Measurements (in millimeters, of type).—Wing 207.0, tail 48.3, culmen 44.5, tarsus 48.8, width of bill at widest point 18.1.

Range.—Central California, western Nevada, southern Arizona and central Texas south into Mexico. (Mexican specimens seen from mouth of Colorado River, Lower California; San Blasito, Tepic; La Barca, Jalisco; Lerma and Ixtacalco, Mexico; and Huindo, Michoacan.)

Remarks.—The type locality of *Anas bicolor* Vieillot[1] is given as Paraguay, so that the typical subspecies of the fulvous tree-duck is of South American range. In the present studies we have had available six specimens from northern Buenos Aires, Argentina that have been assumed to

[1]Nouv. Dict. d'Hist. Nat., Vol. V, 1816, p. 136.

represent the bird of southern South America. A considerable series of birds from the southwestern United States and Mexico have afforded abundant material for comparison.

An occasional specimen of *D. b. helva* approaches typical *bicolor* in dark dull coloration, but all of the North American birds are readily distinguished by the narrower, more slender bill. The greatest breadth of the bill in *bicolor* ranges from 20.2 to 22.1 millimeters, in *helva* (37 specimens) from 17.6 to 19.8 millimeters. Both sexes agree more or less in size of bill. Other measurements of birds from the two continents offer nothing of diagnostic value.

Colaptes pitius cachinnans, subsp. nov.

Description.—Type, Museum of Comparative Zoology, Cat. No. 85293, adult female, from Bariloche, Gobernación de Rio Negro, Argentina, altitude 2500 ft., collected February 17, 1921, by James L. Peters (orig. No. 4054). (Specimen starting postnuptial moult.) Top of head between plumbeous and light violet gray, the shafts of feathers dusky; lores, superciliary stripe, cheeks and auriculars pale ochraceous buff; upper back between hair brown and chaetura drab, each feather narrowly edged with whitish; interscapulars and lower back the same, but each feather with a whitish band about 2 mm. broad placed about 6 mm. from the distal end (a few fresh feathers are blackish, near chaetura drab, with bars deep olive buff); concealed feather bases pallid neutral gray, shafts golden-yellow; rump white; central upper tail-coverts sulphur yellow, their shafts golden yellow; lateral upper tail-coverts blackish, barred with white; primaries between olive brown and clove brown (old feathers), or blackish (new feathers); first (innermost) to eighth inclusive marked on the outer web with whitish or deep olive buff (narrowly tipped with whitish in the new plumage); all primaries except 10th, which is plain throughout, blotched basally with deep olive buff, shafts golden-yellow; secondaries incompletely barred on both webs with deep olive buff to whitish, shafts golden-yellow; primary coverts colored like primaries with a few faint spots on the outer webs; other series more or less completely barred across with one or more bands of deep olive-buff; shafts golden-yellow; axillars and under wing coverts cream color; tail above and below blackish, outer pair of rectrices (minute) irregularly marked on both webs with deep olive-buff; second pair irregularly marked with the same on outer web only; remaining rectrices plain except middle pair which are incompletely barred on the inner web with whitish; shafts black becoming paler basally; under tail-coverts blackish barred with white and faintly washed with sulphur yellow; throat, malar region, and intra-ramal space light buff; sides of neck banded with black; lower throat with sub-cordate spots of blackish; upper breast whitish, each feather with a broad terminal to subterminal blackish band; lower breast sulphur yellow, each feather banded terminally and centrally with blackish; abdomen and sides sulphur yellow with a few spots and bands of blackish; tibiae whitish, narrowly banded with black. Legs and feet lead; bill dusky; iris yellow (collector's note on label).

Measurements (in millimeters).—Males (3 specimens), wing 150.5–157.5 (152.8), tail 113.5–120 (115.8), exposed culmen 33–37 (35.4), tarsus 29.0–29.5 (29.3).

Females (6 specimens). Wing 147–163.5 (157.7), tail 114.3–125.5 (119.3), exposed culmen 36–40 (37.7), tarsus 28.2–30 (29.1).

Type, adult female, wing 152.5, tail 125.5, exposed culmen 37, tarsus 29.

Range.—Specimens seen from Bariloche, Rio Negro; Rio Chico and Maiten, Chubut, Argentina.

Remarks.—This form of the Chilian flicker apparently ranges through the wooded eastern slopes of the Andes in Argentina from the vicinity of Lake Nahuel Huapi southward at least through the territory of Chubut. Specimens taken west of the Andes are not available from south of Concepción, Chile, so that the subspecific identity of the flickers of south Chile is uncertain. The difference in length of bill between these two forms of *pitius* is easily seen from the following measurements (in millimeters) of the bill in typical *C. p. pitius* (specimens from Concon, Santiago and Concepción): males (5 specimens) 40.5–44.4 (41.9); females (2 specimens) 39.5–41.5 (40.5).

The characters used[1] in segregating *Pituipicus* Bonaparte,[2] type *Picus chilensis* Lesson (equivalent to *P. pitius* Molina), seem insufficient to warrant the maintenance of a monotypic genus for the present species, especially with the recognition of the short-billed southern and eastern race *cachinnans*. We have therefore included *pitius* (together with the flickers often separated under the generic division *Soroplex*) in the genus *Colaptes*.

Brachyspiza capensis choraules, subsp. nov.

Characters.—Similar to *Brachyspiza capensis chilensis* (Meyen) but paler; superciliary stripe whiter especially posterior to the eye; sides and flanks lighter, more buffy; rufescent edgings of wing feathers paler.

Description.—Type, U. S. National Museum, Cat. No. 284125, adult male in somewhat worn plumage, from General Roca, Gobernación de Rio Negro, Argentina, collected November 30, 1920, by Alex. Wetmore (orig. No. 5484). Crown dull neutral gray, with a rather narrow black line on either side extending from base of nostril to nape; lores, a faint line on forehead at base of culmen, and superciliary stripe whitish, with a slight admixture of pallid neutral gray; feathers on lower eyelid dull white, those immediately anterior to eye a mixture of dull white and dull black; line from eye to nape, somewhat broadened posteriorly, black; auricular region light mouse gray, with a white spot behind it; a poorly defined subauricular streak, blackish; hindneck tawny, this color extended in a half collar around on sides of neck; lower hindneck and upper back drab; rest of back slightly duller than drab, each feather streaked with fuscous-black; rump and upper tail-coverts slightly paler than hair brown; primaries and secondaries darker than fuscous, the outer primaries margined with whitish, the inner ones and the secondaries with pinkish buff, changing to bister toward

[1]See Ridgway, Birds North and Middle America, Bull. 50, U. S. Nat. Mus. Vol. VI, 1914, p. 7.

[2]Ateneo Italiano, Vol. II, 1854, p. 126.

the coverts; greater wing-coverts fuscous-black, margined externally with drab, this color shading distally to dull pinkish buff, the outer web at tip white, forming a wing band; median wing-coverts fuscous-black, tipped with white, forming a second wing band; lesser wing-coverts dull drab; rectrices dull fuscous, the outer ones margined lightly on outer web with tilleul buff; throat and foreneck white; a spot on either side of foreneck (at end of rufescent half collar) black; upper breast and sides paler than drab-gray with a slight buffy wash; lower breast and abdomen white, the abdomen with a wash of buff; under tail-coverts white; flanks paler than light drab; under wing-coverts dull whitish, mixed slightly with fuscous over metacarpal; bend of wing white. Bill darker than fuscous, nearly black at base; tarsus between natal brown and bone brown; feet blackish. (From dried skin.)

Measurements (in millimeters).—Males, 2 specimens, 77.2–78.2[1] (77.7), tail 59.2–60.5[1] (59.8), culmen 12.0[1]–12.2 (12.1), tarsus 21.3[1]–22.5 (21.9). Females, 5 specimens, wing 73.3–79.8 (76.1), tail 58.2–67.5 (62.1), culmen 11.2–11.7 (11.2), tarsus 21.0–21.5 (21.3).

Range.—Northern Rio Negro (General Roca, breeding), and southern Pampa (Rio Colorado, August) north to the plains of north central Mendoza (Tunuyán, March; Mendoza, March and June).

Remarks.—Though direct comparison of this form has been made with *Brachyspiza c. chilensis*, a subspecies that it resembles closely, this resemblance would seem to be more or less superficial since the bird here described is intermediate between *Brachyspiza c. argentina* of the eastern pampas and *B. c. canicapilla* of Patagonia. To the westward it intergrades with *chilensis* as specimens from Tunuyán and Mendoza are not typical. As in most other forms from this region the exact range of *B. c. choraules* remains to be established.

Saltator aurantiirostris nasica,[2] subsp. nov.

Characters.—Similar to *Saltator aurantiirostris aurantiirostris* Vieillot, but bill longer, larger and heavier.

Description.—Type, Museum of Comparative Zoology, Cat. No. 85819, adult female, from Potrerillos (El Salto, altitude 6,000 feet), Province of Mendoza, Argentina, collected March 19, 1921, by James L. Peters (orig. No. 4127). Specimen in worn breeding plumage. Entire upperparts, including wing coverts and tail-coverts between deep grayish olive and dark grayish olive; lores, orbital ring, auricular region and sides of throat dull blackish; a superciliary stripe of light buff terminates in a patch of the same color on the side of the neck; throat light buff to light ochraceous buff, enclosed by a narrow blackish collar; breast light grayish olive shading into warm buff on the abdomen; flanks and under tail-coverts brighter, the latter paler, the former more or less washed with gray; wings between hair brown and chaetura drab; tail blackish brown becoming paler towards the tip.

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[1]Type specimen.

[2]The Latin word nasica, ae is of common gender.

Measurements (in millimeters).—Males (2 specimens), wing 94.5–96.0, tail 87.0–91.5, culmen 19.0–21.0, depth of bill from posterior end of gonys to highest point of culmen 13.5–14.5, tarsus 27.8–28.5.

Females (2 specimens), wing 91.5–93.5[1], tail 82.4–89[1], culmen 19.3–20[1]. depth of bill from posterior end of gonys to highest point of culmen 13.5–14[1], tarsus 26.7[2].

Range.—Province of Mendoza (Alto Verde, Potrerillos, and Mendoza), and western Gobernación de Pampa (Victorica).

Remarks.—This form, characterized by large heavy bill, may be expected to range through the semi-arid regions of San Luis and San Juan in addition to the geographic distribution indicated by specimens at hand. In separating it we have had available skins of the smaller billed, somewhat brighter colored, eastern form from Paraguay (type locality) and Tucumán, Formosa, Chaco, Corrientes and Entre Ríos, Argentina. In males of *S. a. aurantiirostris* as here restricted the culmen measures from 17.4 mm. to 18.4 mm. (average 17.8 mm.) and the depth of bill, measured from the posterior end of the gonys to the highest point of the culmen 11.2 mm. to 11.9 mm. (average 11.6 mm.). A female (from Las Palmas, Chaco) measures as follows: wing 90.0 mm., tail 85.6 mm., culmen 17.5 mm., depth of bill (taken as described above) 11.6 mm., tarsus 26.5 mm. The bill in three other female birds (from Entre Ríos, and Tapia, Tucumán) has the following dimensions: culmen 17–18 mm., depth (taken as in others) 11.7–12.7 mm.

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[1]Measurement of type specimen.

[2]One specimen.

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PROCEEDINGS

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NOTES ON A COLLECTION OF FERNS FROM THE DOMINICAN REPUBLIC.[1]

BY WILLIAM R. MAXON.

In November, 1920, Dr. W. L. Abbott revisited the Dominican Republic, spending the period to May, 1921, in an investigation of the natural history of the Samaná Peninsula and of the region lying between Sánchez (at the head of Samaná Bay) and Puerto Plata, on the north coast. Two weeks was spent at Sánchez; three weeks in the vicinity of Samaná, a town on the south coast of the Samaná Peninsula about 20 miles east of Sánchez, and on the mountain known as Pilón de Azúcar; seven weeks at several stations along the railroad connecting Sánchez and Puerto Plata, among which were Villa Rivá, Pimentel, Cotuy, Mao, and Navarrete; two weeks in the easternmost portion of the peninsula, in visiting Las Cacaos, Rojo Cabo, and Cape Samaná; one week on the south coast of Samaná Bay, in the vicinity of San Gabriel; and one week in the region of Old Heart River, in the north-central part of the peninsula.

On this trip Dr. Abbott's principal attention was given to collecting plants, of which about 4,000 specimens, representing 1,460 numbers, were obtained. About one-fifth of the collection consists of ferns and fern allies, these for the most part well known species of the Greater Antilles. Notes on some of the rarer species, with description of a well marked new species of *Anemia*, are given herewith.

A full report will shortly be published upon a much larger collection of pteridophyta collected in Haiti by Mr. Emery C. Leonard, who assisted Dr. Abbott in his biological exploration of that country in the first half of 1920.

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MARATTIACEAE.

Danaea elliptica (L.) J. E. Sm.

Near Laguna, Samaná Peninsula (262). Old Heart River (Jato Viejo), Samaná Peninsula; altitude 300 meters (1407).

SCHIZAEACEAE.

Anemia hirta (L.) Swartz.

Cotuy, Provincia de la Vega; sea level to 300 meters altitude (821).

Originally described from specimens collected in the Leogane region, Haiti. It is known otherwise from Porto Rico and the Lesser Antilles, and doubtfully from South America.

Anemia abbottii Maxon, sp. nov.

Rhizome short-creeping, densely covered with rigid blackish acicular hairs; fronds completely dimorphous, dorsal, distichous, the fertile ones greatly surpassing the sterile. Sterile fronds numerous, rigidly ascending or recurved, 4 to 10 cm. long; stipes 2 to 4.5 cm. long, arcuate or subflexuous, dark brown, thickly beset with spreading, curved or subflexuous, flattish, septate, light brown hairs; blades narrowly deltoid-oblong or lance-oblong, 2 to 6 cm. long, 1 to 2 cm. broad near the base, simply pinnate; pinnae 5 to 11 pairs below the larger, obtuse, somewhat lobate terminal segment, spreading, approximate to strongly imbricate, mostly stalked (the lower ones 2 to 7 mm.), orbicular or exactly oval from a cordate or subcordate base, simple, not lobed, equilateral, rigidly coriaceous, strongly convex, highly lustrous above and bearing a few long, curved, antrorse hairs in the deep wrinkles between the veins, beneath copiously but minutely glandulose; margins very greatly thickened beneath, cartilaginous, strongly sinuate-dentate when viewed from the under side. Fertile fronds erect, 7 to 19 cm. long, the rather stout stipes dark brown nearly throughout; sporophyll one-third the length of the stipe, narrow, the pinnae numerous, mostly close, 2 to 5 mm. long, subsessile, pedately lobed, the lobes glandular-puberulent and sparsely hairy; spores about 0.062 mm. in diameter, broadly and deeply striate, the ridges subflexuous and distantly thickened.

Type in the U. S. National Herbarium, no. 1,048,802, collected on the rocky limestone coast 3 to 4 miles west of San Lorenzo Bay, south side of Samaná Bay, Dominican Republic, at sea level (just above high water mark), April 11, 1921, by Dr. W. L. Abbott (no. 1309). Duplicate material has been distributed to the Gray Herbarium, the New York Botanical Garden, the Berlin Museum, and the Herbarium of Prince Roland Bonaparte.

Anemia abbottii is of the group of *A. aurita* Swartz, a Jamaican species, and is most closely allied to *A. portoricensis* Maxon, of Porto Rico. From this it differs notably in its much lesser stature and its simply pinnate sterile fronds, and in having the leaf surfaces hairy above, rather than beneath. Long hairs are wanting from the under surface, whereas they are conspicuously present in *A. portoricensis*. The fertile fronds are much simpler than in *A. portoricensis*, also. The relationship of *A. abbottii* with *A. nipeensis* Benedict, of Cuba, is much more remote.

Lygodium oligostachyum (Willd.) Desv.

Near Sánchez, Samaná Peninsula; sea level to 300 meters altitude (1123a). Near Samaná, Samaná Peninsula; sea level to 200 meters altitude (1223). Puerto Plata, in ravine by waterfall (1459).

A remarkable and interesting little plant, originally figured by Plumier from specimens collected near Lake Miragoân, Haiti, and described by Willdenow as *Hydroglossum oligostachyum*. It is known only from Hispaniola. In addition to the specimens cited above, the following are at hand from the Dominican Republic: *Wright, Parry,* and *Brummel* 1, *Taylor* 247, *Eggers* 2536 (described by Baker as a new species, *Lygodium gracile*), *Fuertes* 376, and *Türckheim* 2649. The last two numbers were distributed as *Lygodium cubense* H. B. K., a very common and much coarser plant endemic to Cuba.

CYATHEACEAE.

Alsophila aquilina Christ.

Pilón de Azúcar, near Laguna, Samaná Peninsula, at 300 to 480 meters altitude (274, 292, 445). Cotuy, Provincia de la Vega; sea level to 300 meters altitude (747, 747a).

These specimens and two other plants from the Dominican Republic (*Wright, Parry, & Brummel* 26, 34) are referred tentatively to this species, described originally from Oriente Province, Cuba, where it is abundant. Similar material is at hand also from Porto Rico. All are characterized by having striped stipe scales, in this respect (as in others) differing from a similar group of forms from Jamaica, Cuba, and Porto Rico which have bright concolorous scales. The two groups have been confused, and both have been called *Alsophila aspera* (L.) R. Br. The typification of *A. aspera* and the segregation of related forms is deferred to a separate paper.

Alsophila pungens (Willd.) Kaulf.

Near Laguna, Samaná Peninsula, chiefly on the Pilón de Azúcar; altitude 100 to 500 meters (347, 411, 424). Villa Riva (Almacén), Provincia Pacificador; sea level to 100 meters altitude (611). Old Heart River (Jato Viejo), Samaná Peninsula; altitude about 300 meters (1337, 1409).

Further specimens from Hispaniola, both in the herbarium of the New York Botanical Garden, are as follows: Plaisance, Haiti, altitude 600 meters, *Nash* 887; near Barahona, Dominican Republic, altitude 480 meters, *Türckheim* 2797. Described originally from "Brazil."

POLYPODIACEAE.

Anetium citrifolium (L.) Splitg.

Near Laguna, Samaná Peninsula; trunks of forest trees (257).

Widely distributed in the West Indies and tropical America generally, but apparently not previously reported from Hispaniola.

Hecistopteris pumila (Spreng.) J. Sm.

Old Heart River (Jato Viejo), Samaná Peninsula; altitude about 300 meters (1399).

A rather rare tropical American species, known in the West Indies previously from Trinidad, Guadeloupe, Jamaica, and Cuba. From its diminutive habit and its growth in thick tufts of moss it is readily overlooked.

Elaphoglossum herminieri (Bory & Fée) Urban.

Near Laguna, Samaná Peninsula (434).

A strikingly distinct species, which, in the writer's experience, is nowhere very common. It is, however, widely distributed in the West Indies.

Adiantopsis radiata (L.) Fée.

Cotuy, Provincia de la Vega; sea level to 300 meters altitude (823).

Polypodium costatum Kunze.

Near Sánchez, Samaná Peninsula; sea level to 300 meters altitude (135). Pilón de Azúcar, near Laguna, Samaná Peninsula; altitude 300 to 500 meters (282). Villa Riva (Almacén), Provincia Pacificador; sea level to 100 meters altitude (570).

Polypodium shaferi Maxon.

Summit of Pilón de Azúcar, near Laguna, Samaná Peninsula; altitude 500 meters; December 18, 1920 (291a).

Known previously only upon two collections from eastern Cuba, *Shafer* 8071 (the type) and *Shafer* 3475. It is allied to *P. mitchellae* Baker, of Central America and Panama.[1]

Polypodium harrisii Jenman.

Near summit of Pilón de Azúcar, near Laguna, Samaná Peninsula; altitude 450 to 500 meters; December 26, 1920 (437, 442).

Known previously only upon a few specimens from Jamaica, where it is very rare.

Pleurogramme seminuda (Willd.) J. Sm.

Pilón de Azúcar, near Laguna, Samaná Peninsula; altitude 300 to 500 meters (436).

Asplenium integerrimum Spreng.

Old Heart River (Jato Viejo), Samaná Peninsula; altitude 300 meters (1336).

This species, now well known from Porto Rico and Cuba, has not previously been reported from Hispaniola, so far as the writer is aware.[2]

Asplenium cirrhatum Rich.

Old Heart River (Jato Viejo), Samaná Peninsula; altitude 300 meters (1384).

Nearly the typical form of this species, described originally from Guadeloupe.

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[1] See Contr. U. S. Nat. Herb. **17**: 410, *pl. 13. B, pl. 14.* 1914; also, **17**: 548, 549. 1916.

[2] See Contr. U. S. Nat. Herb. **10**: 477, 478. 1908.

Dryopteris subincisa (Willd.) Urban.

Old Heart River (Jato Viejo), Samaná Peninsula; altitude 300 meters (1411).

Of this species Christensen has reported a single specimen from Haiti (*Weinland* 3), and the following from the Dominican Republic: *Türckheim* 2719; *Fuertes* 741b, 1548b, 1564.

Dryopteris nemorosa (Willd.) Urban.

San Gabriel, a small island west of San Lorenzo, on south side of Samaná Bay; sea level (1228). Rocky coast 3 to 4 miles west of San Lorenzo Bay; sea level (1311).

The type of this species was from Hispaniola, whence Christensen cites *Fuertes* 1043 and *Eggers* 1575, 2762, and 2762c (all from the Dominican Republic).

Dryopteris chaerophylloides (Poir.) C. Chr.

Near Laguna, Samaná Peninsula; altitude 100 to 200 meters (270). Cotuy, Provincia de la Vega; sea level to 300 meters altitude (809). Lajana, Samaná Peninsula, in heavy forest; altitude 100 meters (1196a). Rocky coast 3 to 4 miles west of San Lorenzo Bay, south side of Samaná Bay; sea level (1227a, 1230a). Old Heart River (Jato Viejo), Samaná Peninsula; altitude about 300 meters (1332).

Oddly enough Christensen cites no specimens of this species from Hispaniola, though listing many from Cuba and Porto Rico and a single specimen each from Jamaica and St. Croix.

Picarda's nos. 277 and 733, which Krug long ago listed as *Aspidium pubescens* var. *sericeum* Mett. (a synonym of *D. chaerophylloides*), are listed by Christensen as *Dryopteris pubescens* var. *haitiensis* C. Chr.

Saccoloma elegans Kaulf.

Near Laguna, Samaná Peninsula; altitude 100 to 200 meters (348, 425).

HYMENOPHYLLACEAE.

Hymenophyllum abruptum Hook.

Near Laguna, Samaná Peninsula; altitude 100 to 200 meters (259).

Trichomanes lineolatum (v. d. B.) Hook.

Near Sánchez, Samaná Peninsula; sea level to 300 meters altitude (200a). Near Laguna, Samaná Peninsula; altitude 100 to 200 meters (389).

LYCOPODIACEAE.

Lycopodium funiforme Bory.

Near Laguna, Samaná Peninsula; altitude 100 to 200 meters (433).

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PROCEEDINGS

OF THE

BIOLOGICAL SOCIETY OF WASHINGTON

OCCURRENCE OF SCOTT'S GRAY FOX IN PROBABLY RECENT CAVE DEPOSITS IN KENTUCKY.

BY OLIVER P. HAY.

From Prof. Arthur M. Miller, of the University of Kentucky, the writer has received for examination a skull of a gray fox which was found in the Breck Smith cave, situated about 8 miles west of Lexington, Kentucky. From the same cave have been exhumed human remains, bones of a buffalo, bones and teeth of a wolf; from a neighboring cave have been secured remains of a deer and bones and teeth of a bear. It is believed by Professor Miller that the cave had not been entered since the coming of white men. The remains found probably do not date back to the Pleistocene.

On comparison of the skull with those of specimens of *Urocyon cinereoargenteus* from Atlantic coast States and with one from Mt. Carmel, Illinois, important differences were noted. The Kentucky skull is broader at the postorbital processes; these processes are larger and more decurved; the bullae are more flattened, and the teeth are thinner. On comparison with specimens of *U. cinereoargenteus scotti* (Mearns) from New Mexico it is found that the latter present characters which are nearly identical with those of the Kentucky specimen. Below are given measurements of the molar teeth and of various parts of the skull of the specimen from Kentucky; of a skull from New Mexico (No. 35713, U. S. Nat. Mus.); of a skull, somewhat injured, from Mt. Carmel, Ill. (No. 38503, U. S. Nat. Mus.); and of another from Georgia (No. 3897 U. S. Nat. Mus.). The Kentucky skull agrees with the New Mexican skull in having flattened bullae, large postorbital processes, similarly lyrated temporal ridges, and a deep depression at the base of each postorbital process.

Measurements of Skulls of the Gray Fox.

	From Kentucky	*From New Mexico*	*From Georgia*	*From Illinois*
Basilar length	115 ±	112	115	115 ±
Width at rear of ear opening	41	41.5	40	37
Width across postorbitals	43.5	42	35	38.3
Interorbital width	28	27	24	26
Width at antorbital foramen	24	24	24.5	25
Width at canines	19.5	19	19.5	18.6
Length pm^4	12	11	12	12
Width pm^4	5	5	6	6
Length m^1	8.5	8	8.5	8.6
Width m^1	10	10	11	11
Length m^2	6.3	6	6	7
Width m^2	8.5	7	9.5	8.6

It is somewhat remarkable that this subspecies should be found so far away from its present habitat. Its occurrence in Kentucky appears to add testimony to the writer's view that at some time shortly after the retirement of the Wisconsin ice there was a period in which the climate was warmer that it now is (Amer. Jour. Sci., ser. 4, vol. 47, p. 363).

Mr. Gerrit S. Miller, Jr., has called the writer's attention to a note published in January, 1921 (Canad. Field-Naturalist, vol. XXXV, p. 19), by W. J. Wintemberg, who reported the discovery of several lower jaws and a part of a skull of the gray fox in an old village site in Canada. The locality is in Oxford County, Ontario. This fox has not hitherto been known to have been an inhabitant of Canada. Judging from the remains found it was formerly as abundant as the red fox.

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PROCEEDINGS

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NEW NORTH AMERICAN HYDNOCERA (COL.).

BY EDWARD A. CHAPIN.

The genus *Hydnocera* Newm. is one of the largest and most unwieldy of the American genera of Cleridae. All of the species are small and while there are characters present which will serve to break it up into natural groups, such work should be undertaken only after study of a comparatively large part of the species and especially of the Central and South American representatives. The present author has made two such segregates, *Isohydnocera* and *Wolcottia;* however, this is but a beginning. It might be stated here that *Hydnocera cryptocerina* Gorh. is closely allied to *Isohydnocera albocincta* Horn and should be transferred to this latter genus, though both species represent a type quite apart from *I. curtipennis* (Newm.) and will ultimately be separated as a distinct genus.

The species described below are all North American and fall within the present limits of *Hydnocera* Newm. I am much indebted to Mr. A. B. Wolcott for the privilege of describing those species which are stated to be from his collections and to Mr. L. L. Buchanan of the United States Biological Survey for the type of *H. iowensis*, n. sp.

Hydnocera colbaltina, n. sp.

Elongate, nearly parallel; above cobalt-blue, under parts, femora, posterior tibiae blue-black. Antennae, mouth parts, anterior and middle tibiae and all tarsi piceous. Head blue, densely but not coarsely punctate, vertex finely rugose, pubescence fine, not dense, suberect, brownish, with a few erect black hairs scattered over the surface. Eyes large, moderately convex. Thorax equilateral, (30–30); densely rugose-punctate; lateral dilation very weak; foveae obsolete; apical transverse impression fine, distinct, basal moderate, pubescence not dense at sides, sparse on disk, subdepressed, brown. Elytra as long as the abdomen; toward tips dehiscent at suture; tips separately rounded and rather coarsely serrate, very densely, evenly and confusedly punctate, pubescence sparse, suberect, brown,

evenly distributed. Color uniform cobalt blue. Underparts metallic blue black, punctuation very fine and sparse, sides of metasternum finely rugulose, pubescence sparse. Legs blue black, anterior and middle tibiae and all tarsi piceous, hairy. Length: 3 mm.

Described from two specimens collected at Pasadena, Cal., by Dr. A. Fenyes. A beautiful species, very distinct from *cyanitincta* Fall, which resembles it superficially, in the form of the thorax and by the sculpture of the thorax and elytra. The type remains in the Wolcott collection, while the paratype is placed in the author's collection.

Hydnocera occidentalis, n. sp.

Form of *H. humeralis* Say from which it differs in the much more dense punctuation of the elytra and the more pronounced rugosity of the thorax and head. Head broad, finely and densely punctured, the occiput somewhat rugulose, antennae short, rather stout, dark brown, trophi dark. Thorax not as wide as head across eyes, or across humeri, broader than long (26–31), disk smooth, lateral portions rugose, individual punctures not distinct. Lateral foveae large, single, lateral dilation prominent. Basal and apical transverse impressions deep and distinct. Scutellum oval behind, sparsely pubescent. Elytra entirely covering abdomen, sides parallel, apices almost truncate, internal angle rounded, very feebly serrate, punctures rather coarse, dense, confused at apices, surface covered with a mixture of silvery white and black hairs, silvery hairs more dense near middle of length, not so placed as to form a pattern. Color greenish to bluish black. Under parts black, mesosternum finely punctured, metasternum smooth. Terminal abdominal segments modified as in *H. pallipennis* Say. Legs black, anterior tarsus slightly more than half as long as anterior tibia. Length: 4–4.5 mm.

Described from six specimens, a male (type), a female (allotype), one male and three females (paratypes) from Palo Alto, Cal., collected in January. Of these, the type and a female paratype remain in the collection of the author, the allotype and male paratype are in the collection of Mr. Wolcott while the remaining paratypes are returned to Mr. C. A. Frost, to whom we are indebted for the privilege of describing this material. This is a less elongate species that *H. cyanitincta* Fall and is not of such a distinct blue color, though it belongs near to this species.

Hydnocera picipennis, n. sp.

Elongate; greenish black, elytra and legs piceous, antennae, mouth parts, anterior tibiae, tarsi (posterior?) paler. Head greenish black, front with fine and coarse punctures intermingled, vertex rugose, pubescence sparse, depressed. Eyes large, convex. Thorax broader than long (31–38), lateral dilations strong, sides toward base parallel, foveae distinct, apical impression fine and distinct, basal a rounded groove, surface densely rugose at sides, smooth on disk with a few punctures, pubescence sparse, suberect. Scutellum black, sparsely hairy. Elytra nearly as long as abdomen, lateral margins slightly sinuate at apical third, tips oblique, internal angle rounded, irregular nearly smooth, suture nearly closed. Surface coarsely, densely and somewhat confluently punctured, pubescence not dense, evenly dis-

tributed. Color uniform piceous. Under parts greenish black, finely and not densely punctured, sparsely pubescent. Legs piceous, anterior tibiae and all tarsi (posterior?) paler. Length: 3.7 mm.

Type locality.—"Texas." Described from one specimen in the Wolcott collection. Posterior tarsi missing.

The oblique tips and color of the elytra separate this species from any now known to me.

Hydnocera pulchra, n. sp.

Rather broad and compact, not notably convex; aeneous; antennae and mouth parts piceous; knees, tibiae, tarsi and elytral maculations testaceous. Head metallic greenish black, very finely and very densely punctate, vertex finely rugose. Eyes large, convex, prominent. Pubescence moderately dense, fine, depressed. Thorax broader than long (40–47); sides roundly dilated; lateral foveae shallow but distinct; apical impressions fine, distinct; surface densely rugose punctate at sides, on disk finely and densely punctate; pubescence rather dense, depressed, pale; color greenish black, bronzed. Scutellum black, moderately pubescent. Elytra considerably shorter than the abdomen, toward apex dehiscent at suture, tips separately rounded and nearly smooth (margin toward apex finely serrate), tumid; surface moderately coarsely and densely punctate, punctures shallow, indistinct on basal half. Surface moderately densely pubescent, the pubescence as in *subfasciata* Lec., color aeneous with an irregular testaceous marking on each elytron. The pale spot on the elytron is almost S-shaped, commencing at scutellum, running along basal margin almost to humerus, then obliquely to suture at basal third, thence along suture for a short distance and finally ending at about apical fourth near middle of width of elytron. Under parts aeneous, rather densely pubescent, finely and densely punctate. Legs aeneous, knees, tibiae and tarsi testaceous, hairy. Length: 4.8 mm.

Type locality.—Mineral Spring, Tulare Co., Cal.

Somewhat resembles *H. hamata* Lec. in coloration but differs in the finer punctuation of the elytra.

Hydnocera iowensis, n. sp.

Form of *H. longa* Lec. Head, thorax and underparts brassy black, elytra black with slight tinge of blue, antennae (except extreme tips), trophi, anterior femora in part, anterior tibiae and tarsi pale brown. Head closely and rather coarsely punctured, deeply and broadly impressed between eyes. Thorax slightly broader than long (47–53), disc rough, almost transversely rugose, sides coarsely and closely punctured, lateral dilations broad and low, anterior and basal transverse impression deep and straight. Scutellum conspicuously trapezoidal. Elytra long, suture dehiscent from apical third, the apices acutely rounded and coarsely serrate, punctures coarse and not crowded, evenly distributed over entire surface. Vestitute sparse, erect, and evenly distributed. Under parts as in genus. Basal segment of all tarsi distinctly pale, claws dark. Length: 5 mm.

Type.—A female from Lake Okoboji, Ia., July 24, 1916, collected by Mr. L. L. Buchanan.

At first glance, might be confused with *H. humeralis* Say, but is amply distinct in the form of the elytra.

Hydnocera vicina, n. sp.

Elongate, somewhat convex; aeneous black, elytra brown with testaceous marking, antennae, palpi and legs dark testaceous. Head bronze, finely and moderately densely punctured; pubescence not dense, depressed. Eyes olive brown, moderately prominent. Thorax slightly broader than long, (40–45), sides slightly dilated, lateral foveae nearly obsolete, apical impression feeble, obsolete on disk, basal a broad groove; surface at sides rugose-punctate, on disk nearly smooth with a few punctures, pubescence moderately long, depressed but not dense. Scutellum black, pubescent. Elytra nearly as long as abdomen, attenuate toward tips, suture closed to apical third, tips separately rounded and coarsely serrate, tumid. Surface coarsely and densely punctate, punctures slightly confused toward apices, pubescence not dense, depressed. Color brown, each elytron with two testaceous markings, the first basal, quadrate, outer apical angle rounded, narrowly distant from suture but including humerus, the second shaped as first but smaller, slightly post median. Underparts black, decidedly bronzed, finely and densely punctured, very sparsely pubescent. Legs testaceous, apex of femora, and hind tibiae infuscate. Length: 4.1 mm.

Described from a unique specimen in the Wolcott collection, where the type remains, collected at Esperanza Ranch, Brownsville, Tex., July 19, 1906 (Jagow).

Closely related to *Hyd. robusta* Horn from which it may be separated by the much less pubescent under surface, especially on the metapleurae, and by the very different appearance of the prothorax, *robusta* Horn being entirely covered with rather dense punctures.

Hydnocera commixta, n. sp.

Moderately elongate; aeneous, elytra black, legs piceous, anterior and middle tibiae, all tarsi, antennae and mouth parts paler. Head aeneous, finely and densely punctured, pubescence sparse and erect, eyes large and convex. Thorax broader than long, (37–42), lateral dilations moderate, foveae shallow, conspicuous, apical impression weak, broadly V-shaped, apex of V directed posteriorly, basal impression distinct, surface coarsely and not sparsely punctured, disk nearly smooth. Scutellum black, sparsely pubescent. Elytra nearly as long as abdomen, attenuate toward tips, which are slightly obliquely truncate, coarsely serrate except on truncation, tumid. Surface coarsely, confluently punctured, pubescence sparse, equally distributed, sub-erect, pale. Color uniform black. Underparts slightly greenish black; mesosternum coarsely punctate, metasternum finely rugose, metapleurae finely punctate. Sparsely pubescent. Legs piceous, anterior and middle tibiae and all tarsi paler. Length: 4.5 mm.

Type labeled "N. Y.-Sherman." Other specimens "Mass" and "Drac[ut]–7–28–'10." Type in Wolcott collection, cotype in Blanchard collection at the Museum of Comparative Zoology, Harvard University, with three other specimens. Somewhat of the appearance of *Wolcottia pedalis* (Lec.) but distinguished by the more prominent eyes and more coarsely punctate thorax.

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PROCEEDINGS

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A NEW DRYONASTES FROM SZECHUAN, CHINA.

BY J. H. RILEY.[1]

In a small collection of birds, mostly from Mount Omei, central Szechuan, China, presented to the U. S. National Museum recently by the Reverend David C. Graham, the following very distinct species of *Dryonastes* was included. As it apparently agrees with no published description, I take great pleasure in naming it after the donor:

Dryonastes grahami, sp. nov.

Type, adult male, U. S. National Museum, No. 257,204, Shin Kai Si, Mount Omei, Szechuan, China, July 6, 1921. Collected by David C. Graham.

General color above and below, deep neutral gray, mouse gray on the throat and jugulum; forehead and a narrow line bordering the black mask, light neutral gray; feathers covering the nostril, supra-loral streak running back beyond the eye as a narrow line, lores, sub-orbital and malar regions to posterior border of the eye, and chin, black, forming a mask; ear-coverts and an irregular patch on sides of neck, overlapping slightly as a narrow streak the posterior extension of the black subra-loral streak, white, the ear-coverts tinged with grayish anteriorly; upper and under tail-coverts, mouse gray; wing-coverts similar to the back; remiges, chaetura black, edged on the outer web with deep mouse gray; tail, sooty black; narrow border of feathers surrounding anus, white. Wing, 130.5; tail, 140; culmen, 25; tarsus, 46; middle-toe, 27 mm.

Remarks.—In structure and size the present species agrees fairly well with *Dryonastes perspicillatus* (*Dryonastes* as at present constituted is not a very homogeneous genus), but not in color. The black mask of *Dryonastes grahami* only differs in detail from that of *Dryonastes perspicillatus*, but the white on the ear-coverts and sides of neck and gray plumage of the former make it very distinct and quite unlike any described species known to the author.

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PROCEEDINGS

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ON CHLOROSPINGUS GOERINGI SCLATER AND SALVIN.

BY J. H. RILEY.[1]

Mr. B. H. Swales recently purchased a small collection of birds from the well-known collector, Señor S. Briceño, collected in the Merida Region of Venezuela and presented it to the U. S. National Museum. Amongst the lot was a specimen of *Chlorospingus goeringi*, now usually placed in the genus *Hemispingus*, but where on account of its short rounded wing, short rounded tail, heavy bill, and large strong feet it does not belong. Indeed, the strong feet and rather heavy bill remind one very much of certain sparrows, especially *Poospiza nigro-rufa* in the style of coloration, but the wing is more rounded, the feet larger and stronger, and the bill heavier. Its affinities seem to be more fringilline than tanagrine and it certainly should be removed from the position usually assigned it. The short rounded wing and large strong feet would seem to indicate that it is a ground inhabiting bird. The feathers of the lower back and rump seem to be unusually full and loose. As it apparently does not belong to any of the accepted genera, I accordingly propose the following name and diagnosis for its reception:

Orospingus, gen. nov.

Type, *Chlorospingus goeringi* Sclater and Salvin.

Superficially similar to *Hemispingus* Cabanis (type *Arremon superciliaris* Lafresnaye), but wing about equal to the tail, instead of being considerably longer; tail more rounded; feet large and strong, tarsus exceeding middle-toe and claw by less than the length of the claw of the latter, instead of being much longer than the middle toe and claw; bill much heavier, depth at base about equal to the width, instead of being greater than the width.

Coloration different; above dusky neutral gray with a white superciliary, below ochraceous orange.

Remarks.—*Chlorospingus castaneicollis* Sclater, though somewhat similar in style of coloration, differs structurally in its weaker bill and feet.

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PROCEEDINGS

OF THE

BIOLOGICAL SOCIETY OF WASHINGTON

MUHLENBERG ON PLANTS COLLECTED IN THE DISTRICT OF COLUMBIA REGION ABOUT 1809.

BY W. L. McATEE.

In the year 1809 no list of plants of the District of Columbia region had yet been published, nor, so far as we know, had any society been organized for the study of plants. Data on plant collections of that period are of considerable value, therefore, and it is of interest to know that at least three amateurs were collecting here at that day and sending their plants to the leading American botanist of the time, Dr. Henry Muhlenberg.[1]

These facts appear from a letter[2] of Muhlenberg's addressed to "Dr. John Ott, at Georgetown, Columbia D.," the botanical matter in which is as follows:

Lancaster, Sept. 25, 1809.

Dear Sir:

I am ever so much obliged to you for this magnificent package of plants and also to the other gentlemen who have contributed to it. I was very glad indeed, and all my wishes have been satisfied. I was short of some plants which Clayton described in his excellent Flora Virginica. Some of them I found in the present collection, and if you continue in this way I am in hopes to have them all in the end. The section around Columbia is particularly rich in rare plants. I regret that the plants have not been provided with numbers. By enumerating them the correspondence regarding the same is very much facilitated. The nomenclature is clearer and the fixing of new and unknown plants will be more intelligible. I have been looking them all over, but only superficially. When I put them into my herbarium I shall make a thorough examination of the same. I shall specify below the nomenclature just the same way as I have put it into my diary according to my first examination. Such as are new to me and of which I am not sure I have marked with a cross.[3] Of these I would like

[1]This is the form of his name on the title page of his pioneer Catalogus Plantarum Americae Septentrionalis, 1813, and probably should be adopted as the well considered preference of his mature years rather than the baptismal name of Gotthilf Heinrich Ernst given in encyclopedias and the like.

[2]The body of this letter is in German script which was translated for me, very obligingly, by Dr. Carlo Zeimet of the U. S. Bureau of Entomology. The letter, in my possession, was purchased through a book-dealer, from an autograph collection marketed in Philadelphia.

[3]Asterisks have been substituted.

to have more specimens and, if possible, seeds. In case they are very interesting to me I marked them "Nb." If I could have these in order to plant them in my garden and examine them alive, I should be very much pleased. Kindly excuse my imposition upon you in this regard.

[Then follows the list of plants for which I append both Muhlenberg's names (together with the symbols he mentions) and modern equivalents. With one exception the latter agree with those in Britton and Brown, Illustrated Flora of the Northeastern United States, etc., Second Ed. 1913.]

Muhlenberg's Name.	Modern Equivalent.
*1. Heliotropium europaeum Nb	Same
*2. Hyoseris maior Nb	Cynthia dandelion
3. Buphthalmum helianthoides	Heliopsis helianthoides
4. Eupatorium Nb	Same
*5. Aster	"
*6. Narthecium pubens	Triantha racemosa
*7. Melanthium racemosum	" "
8. Antirrhinum linaria	Linaria linaria
*9. Verbascum	Same
10. Saxifraga nivalis	Should be Micranthes virginensis no doubt.
11. Stellaria pubera	Alsine pubera
b. Oxalis corniculata	Xanthoxalis corniculata
12. Arabis canadensis	Same
b. Mentha viridis. A var.?	Mentha spicata
13. Ranunculus flamula	Ranunculus reptans
*14. Ruellia	Same
15. Oenothera fruticosa. A var.?	Kneiffia fruticosa
16. Sambucus canadensis	Same
17. Sium angustifolium	Berula erecta
18. Evonymus atropurpureus	Euonymus atropurpureus
19. Prinus verticillatus	Ilex verticillata
20. Vaccinium disomorphum	Vaccinium atrococcum
21. Smyrrnium integerrimum	Taenidia integerrima
22. Thaspia trifoliata	Thaspium trifoliatum
23. Cicuta maculata	Same
24. Convolvulus spithamaeus	Same
b. " panduratus	Ipomoea pandurata
25. Cynoglossum officinale	Same
26. Myosotis arvensis	"
27. Ceanothus americanus	"
b. " corymbosus Nb.	Name for an intermediate form not now recognized.
*28. Verbascum like 9	Same
29. Phlox pilosa	Same
*b. " glaberrina	"
30. " subulata	"

31. Phlox maculata	Same
*b. " pilosa?	"
*c. " glaberrima like 29	"
32. Asclepias obtusifolia	Asclepias amplexicaulis
b. " cordata	" rubra
33. Evonymus atropurpurcus	Euonynus atropurpureus
34. Anchusa villosa	Possibly Lithospermum canescens
35. Cynoglossum offic. like 25	Cynoglossum officinale
36. Lysimachia ciliata	Steironema ciliatum
37. " angustifolia	" lanceolatum
38. Linum virginianum	Cathartolinum virginianum
39. Heuchera	Same
40. Lysimachia hirsuta	Lysimachia quadrifolia
41. Bignonia sempervirens	Gelsemium sempervirens
42. Prinus verticillatus	Ilex verticillata
43. Lithospermum arvense	Same
44. Dodecatheon meadia	"
45. Lysimachia stricta	Lysimachia terrestris
*46. Rhamus Nb.	Same
47. Physalis lanceolata m.	Physalis sp.
b. " viscosa Mich.	Physalis heterophylla
c. Solanum carolinianum	Solanum carolinense
48. Pentstemon laevigat.	Pentstemon pentstemon
49. Scutellaria ovalifolia	Scutellaria pilosa
50. " hyssopifolia	" integrifolia
51. Mimulus alatus	Same
52. Stachys aspera	"
*53. Gratiola pilosa	Sophronanthe pilosa
54. Lycopus virginicus	Same
55. Scutellaria hyss. like 50	Scutellaria integrifolia
56. Clinopodium vulgare	Same
57. Gentiana ochroleuca	Dasystephana villosa
58. Claytonia virgin.	Claytonia virginica
59. Viburnum dentatum	Same
60. Itea virginica	"
61. Lonicera symphoricarpos	Symphoricarpos symphoricarpos
62. Thesium umbellatum	Comandra umbellata
b. Gentiana saponaria	Dasystephana saponaria
63. Plantago lanceolata	Same
64. Sanicula marilandica	"
65. Euphorbia corollata	Tithymalopsis corollata
66. Ranunculus bulbosus	Same
67. Anemone thalictroides	Syndesmon thalictroides
b. " quinquefolia	Same
68. Geranium maculatum	"
69. Panax trifoliatus	Panax trifolium
70. Mitchella repens	Same
b. Asarum canadense	"

71. Vaccinium resinosum	Gaylussacia baccata
72. Cuphea viscosa	Parsonsia petiolata
73. Polygala seneca	Polygala senega
b. " incarnata	Same
c. " sanguinea	Polygala viridescens
d. Galium pilosum	Same
74. Vaccinium stamineum	Polycodium stamineum
b. " frondosum	Gaylussacia frondosa
c. " virgatum	Same
75. Rhexia virginica	"
b. Stilosanthes elatior	Stylosanthes biflora
76. Glycine monoica	Falcata comosa
b. " apios	Apios apios
77. Vicia caroliniana	Same
b. Galega virginica	Cracca virginiana
c. Hedysarum repens	Lespedeza repens
d. " divergens	?
78. Asclepias tuberosa	Same
79. Kuhnia critonia	Kuhnia eupatorioides
80. Echium vulgare	Same
81. Dodecatheon	"
*82. Aster	"
*83. "	"
84. Erigeron heterophyllum	Erigeron annuus
85. " bellidifolium	Erigeron bellidifolius
86. Aster diversifolius	Aster undulatus
87. " linarifolius	Ionactis linariifolius
88. " ericoides	Same
89. " puniceus	"
90. " corymbosus	Aster divaricatus
91. Asclepias cordata	Asclepias rubra
b. " verticillata	Same
92. Aster concolor	"
*93. Solidago	"
94. " gigantea	Solidago serotina
b. " rugosa	Same
*95. Solidago	"
b. " bicolor	"
*c. Solidago	Same
96. " nemoralis	"
97. Viola primulaefolia	Viola primulifolia
b. " palmata	Same
c. " arvensis	"
d. " sagittalis	Viola sagittata
e. " cucullata	Same
f. " blanda?	"
98. Lobelia cardinalis	"
b. var. alba	"

c. Lobelia siphilitica	Lobelia syphilitica
d. " puberula	Same
*e. " Nb.	"
99. Impatiens biflora	"
b. Eupatorium purpureum	"
100. Conyza asteroides	Sericocarpus asteroides
b. " linifolia	" linifolius
101. Eupatorium perfoliat.	Eupatorium perfoliatum
102. Rudbeckia fulgida	Same
103. Eupatorium coelestinum	"
104. " hyssopifol.	Eupatorium hyssopifolium
105. " scandens	Mikania scandens
106. Inula mariana	Chrysopsis mariana
*107. Eupatorium album	Same
*108. Siegesbeckia Nb	Phaethusa
109. Elephantopus tom.	Elephantopus tomentosus
110. Cacalia atriplicifolia	Mesadenia atriplicifolia
111. Helenium autumnale	Same
112. Doronicum nudicaule	Arnica acaulis
113. Hieracium venosum	Same
b. " marianum	"
*114. Senecio	"
115. Bidens frondosa	"
b. Sonchus floridanus	Lactuca floridana
116. Solidago lanceolata	Euthamia graminifolia
117. Gnaphalium plantag.	Antennaria plantaginifolia
*118. Helianthus angustifol.	Helianthus angustifolius
119. Rudbeckia laciniata	Same
120. Helianthus mollis	"
*121. " gigas?	Helianthus giganteus
122. Chrysanthemum leucanthemum	Same
123. Chrysogonum virg.	Chrysogonum virginianum
124. Liatris spicata	Laciniaria spicata
125. Bidens chrysanthemoides	Bidens laevis
126. Polymnia uvedalia	Same
127. Vernonia noveboracensis	"
*128. Bacharis halimifolia	Baccharis halimifolia
129. Arum triphyllum	Arisaema triphyllum
130. Verbascum blattaria var.	Same
131. Silene pensilvanica	Silene caroliniana
b. Sedum ternatum	Same
132. Andromeda racemosa	Eubotrys racemosa
133. Cucubalus stellatus	Silene stellata
134. Cerastium arvense?	Same
135. Andromeda mariana	Neopieris mariana
b. " paniculata	Xolisma ligustrina
c. Epigaea repens	Same
136. Pyrola maculata	Chimaphila maculata

b. Gaultheria canadensis	Gaultheria procumbens
137. Lythrum verticillatum	Decodon verticillatus
138. Podalyria australis	Baptisia australis
139. Lupinus perennis	Same
b. Crotolaria sagittalis	"
140. Monotropa uniflora	"
141. Apocynum cannabinum	"
142. Cassia nictitans	Chamaecrista nictitans
143. Ophrys cernua	Ibidium cernuum
b. " aestivalis	" vernale?
c. Orchis ciliaris	Blephariglottis ciliaris
d. " psycodes	" psycodes
e. " lacera	" lacera
f. Arethusa bulbosa	Same
g. " ophiogloss.	Pogonia ophioglossoides
h. Limodorum tuberosum	Same
i. Cypripedium parviflorum	"
k. Malaxis liliifolia	Liparis liliifolia
144. Aristolochia serpentaria	Same
145. Lycopodium complanatum	Same
b. Asplenium ebeneum	Asplenium platyneuron
c. Aspidium thelypteris	Dryopteris thelypteris
d. Adiantum pedatum	Same
e. Osmunda regalis	Same
f. Aspidium asplenioides	Athyrium asplenioides, recently reinstated by Butters as a segregate from *A. filix-foemina* Fide W. R. Maxon.
g. Onoclea sensibilis	Same
h. Aspidium acrostichoides	Polystichum acrostichoides
i. Botrypus virgin.	Botrychium virginianum
146. Passiflora lutea	Same
b. Sisyrinchium mucronatum	"
147. Verbena angustifolia	"
b. Circaea canadensis	Circaea lutetiana
*c. Salvia urticifolia	Same
148. Collinsonia canadensis	"
b. Dianthera pedunculosa	Dianthera americana
149. Salvia lyrata	Same
150. Hamamelis virginica	Hamamelis virginiana
*b. Salsola tragus	Salsola kali
151. Houstonia verna	Probably Houstonia coerulea
b. Galium tinctorium	Same
152. Dentaria laciniata	"
b. Arabis bulbosa	Cardamine bulbosa
153. Cerastium arvense	Same
154. Argemone mexicana	"
b. Thalictrum polygamum	"

155. Sicyos angulata	Sicyos angulatus
156. Hedysarum ciliare	Meibomia obtusa
157. " reticulatum	Lespedeza virginica
158. " repens as above	Lespedeza repens
159. " cuspidatum	Meibromia bracteosa
160. Clitoria mariana	Same
161. Euphorbia hypericifolia	Chamaesyce preslii
162. Sparganium erectum	Sparganium sp.
163. Panicum virgatum	Same
164. Melanthium virg.	Melanthium virginicum
165. Tradescantia virg.	Tradescantia virginiana
b. Scirpus lacustris	Scirpus validus
166. Pontederia cordata	Same
b. Saururus cernuus	"
167. Veratrum luteum	Chamaelirium luteum
b. Convallaria biflora	Polygonatum biflorum
168. Uvularia perfoliata	Same
169. Scutellaria lateriflora	"
b. Gerardia villosa	Dasystoma flava
170. Cunila mariana	Cunila origanoides
b. Chelone glabra	Same
171. Pedicularis canad.	Pedicularis canadensis
172. Campanula amplexicaulis	Specularia perfoliata

The plants have been lying in the package in this way, and I left them in the same order until I reached the first numbers which were new to me and appeared to me quite strange. Where I do not make any mark it refers to plants which we have here in gardens or otherwise growing wild.

Now I should like to have also Virginian plants of the Flora Gronovii which I am lacking and which I should be glad to receive: 1. Salicornia, 2. Utricularia, 3. Cyperus odoratus, 4. Asperula, 5. Aphanes, 6. Sagina, 7. Lycopsis, 8. Triosteum angustifolium, 9. Swertia, 10. Tordylium, 11. Angelica lucida, 12. Burmannia, 13. Elatine hydropiper, 14. Vitex, 15. Dolichos regularis, 16. Helianthus atrorubens, 17. Verbesina virginica, 18. Centaurea, 19. Lobelia cliffortiana, 20. Zannichellia, 21. Tragia, 22. Atriplex, 23. Any hitherto undescribed plant.

Kindly transmit my best thanks, in my name, to Mr. Billy[1] and Mr. Pickford, and whenever you want something from this section of the country, kindly let me know.

With my best regards and assurance of friendship, I remain

Your obedient servant and friend,

Heinrich Muhlenberg.

Allowing for duplications and for incomplete identification there are in the neighborhood of 224 species of plants named in this remarkable letter. Though some of the names can not be identified with those of species now ranging in our area, there is no reason to doubt that all of the plants were collected in or near the District of Columbia and probably within a shorter

[1]This Mr. Billy no doubt is the Peter Billy who had sent plants from Virginia as stated in the preface of Muhlenberg's Catalog. No additional information on Mr. Pickford has yet been obtained.

radius than used by botanists in recent years. The general correctness of the determinations is shown by the fact that only 12 of the specifically identified plants of which the modern synonyms are known, in addition to one named only to the genus, are not included in the latest catalog of the Flora of the District. (Vol. 21, Contrib. Nat. Herb. 1919.)

The quality of collecting done by Dr. Ott and his associates was good, their plants by no means being of the most common sorts. Judged by recent experience the following plants (in the order of the list) must be considered either as local, uncommon, or rare: *Triantha racemosa, Myosotis arvensis, Phlox pilosa, Asclepias rubra, Dodecatheon meadia, Sophronanthe pilosa, Anemone quinquefolia, Panax trifolium, Arnica acaulis, Helianthus angustifolius, Baccharis halimifolia, Gaultheria canadensis, Decodon verticillatus, Baptisia australis, Blephariglottis ciliaris, Arethusa bulbosa, Salsola kali, Argemone mexicana* and *Pedicularis canadensis.*

The presence in the collection of the *Triantha, Asclepias rubra, Sophronanthe, Helianthus angustifolius, Blephariglottis ciliaris* and *Arethusa bulbosa,* shows beyond question, that these collectors had visited one or more of the Magnolia bogs, which harbor, as we now thoroughly realize, some of the rarest and most interesting plants of the region.

We are most fortunate in having records of plants that the earlier botanists collected and the attempt to rediscover them is a fascinating field of endeavor. The history of one of the bog species, namely, *Arethusa bulbosa* is very interesting and illuminating in this respect. Listed in the Florula Columbiensis of 1819 it later became one of the 'lost species' and was not rediscovered until 1918. Relating in part to this orchid, the writer, in discussing[1] the Magnolia Bogs as a source of species recorded in the older works, but subsequently lost to sight, noted that *Polygala lutea, P. cruciata, Rhexia mariana* and *Xyris caroliniana* had been recovered and added "May we not also hope to discover in these bogs other plants mentioned, and with little doubt seen, by the older writers, such as *Chamaedaphne calyculata, Trichostema lineare, Arethusa bulbosa,* and *Pogonia divaricata*?" The ink was scarcely dry on the page when the *Arethusa* was rediscovered in the Suitland Bog.

Ward in his admirable "Flora" of 1881[2] listed 146 species of plants from previous publications on the botany of the District of Columbia region which at that time seemed to have disappeared. However by 1919, 36 of those species had been re-collected and were included in the "Flora" of that year.

These confirmations of their discoveries do credit to the earlier botanists and encourage us to believe that one after another most of the plants recorded by them will again be collected in our region. Turning once more to the list in the Muhlenberg letter (which, be it recalled, has priority in date over any of the published catalogs), we find that of the species assigned with reasonable satisfaction to modern synonyms, 12 are not included in the most recent Flora. Of these, 7 have a range unquestionably covering the District of Columbia and it would seem certain should again be col-

[1] Bull. Biol. Soc. Wash. No. 1, 1918, p. 86.

[2] Bul. 22, U. S. Nat. Mus.

lected here, namely: *Thaspium trifoliatum, Phlox glaberrima, Scutellaria integrifolia, Vaccinium virgatum, Hieracium marianum, Laciniaria spicata* and *Blephariglottis psycodes.* In addition to these a plant, No. 46, named only to the genus *Rhamnus,* brings sharply to mind the fact that while it seems within the bounds of possibility to collect here any of the 5 species of *Rhamnus* treated in the "Illustrated Flora," there are no preserved specimens of any of them.[1]

The other five species of the Muhlenberg list have known ranges coming close enough to our territory to be ranked as possibilities for re-collection, especially in the light of several remarkable extensions of range that have recently been made (e. g. *Aletris aurea, Senecio crawfordii).* These possible rediscoveries are: *Ranunculus reptans, Berula erecta, Gelsemium sempervirens* (perhaps escaped from cultivation), *Viola palmata* and *Elephantopus tomentosus.*

Only one of all these plants (namely *Liatris spicata*) is in Ward's list of 146 'lost' species: that list as noted above, has been reduced by newly published records to 110. If we add the present 11, or better 12 (including the *Rhamnus*) we find there are still 122 previously recorded species which Washington botanists have the pleasure of searching for, the search to be crowned in many cases, it is hoped, by the great satisfaction of rediscovery.

[1] In this connection the writer feels impelled to state that his notes record the collection of *Rhamnus* in fruit. along Piney Branch, D. C., Aug. 28, 1904. Unfortunately he was not pressing plants at that time, but specimens were brought into our laboratory for indentification, and with fruit in hand, it hardly seems that an error in recognizing this genus could have been made.

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NOTES ON THE NOMENCLATURE OF THE GENUS CRYPTURUS ILLIGER.

BY HARRY C. OBERHOLSER.

The generic name *Crypturus* as originally proposed by Illiger (Prodromus System. Mamm. et Avium, 1811, after April, p. 244) included two species—*Tetrao cinereus* Gmelin and *Tetrao major* Gmelin. It has since universally been employed as the generic designation for the group of which *Tetrao cinereus* Gmelin is a member, and this species has been consistently cited as its type. However, as may be seen by reference to the introduction of Illiger's work (Prodromus System. Mamm. et Avium, 1811, after April, pp. XVI–XVII) the name *Crypturus*, along with a number of others, chiefly mammal names, must be regarded as merely substitutes for older names that Illiger for one reason or another intended to reject. His reasons for rejecting *Sula* and *Tinamus* may be seen from the quotation given below, as these two generic names are included in a list of 37 names, all the rest of which relate to mammals, by which the paragraphs of this quotation are immediately followed:

"Nomina itaque generica, ab auctoribus transmissa, sancte quidem servavi, nisi aperte praecepta Linnaeana offendebant; tuncenim cum aliis illa mutavi, in quibus eligendis consilium, benevolenter impertitum, clarissimorum Virorum, in graecis litteris versatissimorum, Lichtensteinii patris et Buttmanni, me duxit. Nomina generica, quae rejeci, secundum regulas codicis nostri, Philosophiae nempe botanicae Linnaeanae, quibus, contradicunt, digesta jam enumerabo.

§220. Nomina generica primitiva (uti barbara, quum lingua eorum ab eruditis non intelligatur) nemo sanus introducit.

et §229. N. g. quae ex graeca vel latina lingua radicem non habent, rejicienda sunt:"

Attention has already been called by Mr. G. M. Mathews (Birds of Australia, IV, pt. 3, June 23, 1915, p. 202) to the real status of the generic name *Dysporus* Illiger as merely a substitute name for *Sula*, and this name has now been displaced by *Moris* Forster. The name *Crypturus*, however, which has an exactly parallel status, being a substitute and therefore an absolute synonym of *Tinamus* Latham, must likewise be rejected, and another name be sought for the group to which it has commonly been applied. Two of the species of this group, *Tinamus tataupa* Temminck and *Crypturus parvirostris* Wagler, have been generically separated by Brabourne and Chubb (Ann. and Mag. Nat. Hist., ser. 8, XIV, October 1, 1914, p. 322) under the name *Crypturellus*, and because this name was found to be preoccupied, later as *Microcrypturus* (Chubb, Bull. Brit. Ornith. Club, XXXVIII, No. CCXXIX, December 29, 1917, p. 30). Since these two species are generically different from the others commonly referred to the genus *Crypturus*, and since apparently there are no available synonyms, a new name must be provided for *Crypturus* Auct. nec Illiger. We propose, therefore, to call the group **Crypturornis,**[1] nom. nov., with *Tetrao cinereus* Gmelin as type.

On account of this change the species and subspecies of this genus will stand as follows:

Crypturornis cinereus (Gmelin)
Crypturornis macconnelli (Brabourne and Chubb)
Crypturornis berlepschi (Rothschild)
Crypturornis castaneus (Sclater)
Crypturornis obsoletus obsoletus (Temminck)
Crypturornis obsoletus cerviniventris (Sclater and Salvin)
Crypturornis obsoletus griseiventris (Salvadori)
Crypturornis obsoletus purensis (Chubb)
Crypturornis soui soui (Hermann)
Crypturornis soui mustelinus (Bangs)
Crypturornis soui albigularis (Brabourne and Chubb)
Crypturornis soui hoffmannsi (Brabourne and Chubb)
Crypturornis soui andrei (Brabourne and Chubb)
Crypturornis soui harterti (Brabourne and Chubb)
Crypturornis soui caquetae (Chapman)

[1] *κρυπτός*, occultus, *οὐρά*, cauda, *ὄρνις*, avis.

Crypturornis soui caucae (Chapman)
Crypturornis soui modestus (Cabanis)
Crypturornis soui panamensis (Carriker)
Crypturornis soui meserythrus (Sclater)
Crypturornis undulatus undulatus (Temminck)
Crypturornis undulatus scolopax (Bonaparte)
Crypturornis undulatus confusus (Brabourne and Chubb)
Crypturornis boucardi (Sclater)
Crypturornis kerriae (Chapman)
Crypturornis transfasciatus (Sclater and Salvin)
Crypturornis adspersus adspersus (Temminck)
Crypturornis adspersus vermiculatus (Temminck)
Crypturornis adspersus simplex (Salvadori)
Crypturornis adspersus yapura (Spix)
Crypturornis occidentalis (Salvadori)
Crypturornis mexicanus (Salvadori)
Crypturornis inornatus (Nelson)
Crypturornis atricapillus (Tschudi)
Crypturornis garleppi (Berlepsch)
Crypturornis rubripes (Taczanowski)
Crypturornis noctivagus (Wied)
Crypturornis columbianus (Salvadori)
Crypturornis tetrao tetrao (Boddaert)
Crypturornis tetrao bimaculatus (Gray)
Crypturornis tetrao salvini (Salvadori)
Crypturornis brevirostris (Pelzeln)
Crypturornis bartletti (Sclater and Salvin)
Crypturornis bartletti caroli (Brabourne and Chubb)
Crypturornis cinnamomeus cinnamomeus (Lesson)
Crypturornis cinnamomeus spencei (Brabourne and Chubb)
Crypturornis cinnamomeus goldmani (Nelson)
Crypturornis dissimilis (Salvadori)
Crypturornis erythropus (Pelzeln)
Crypturornis strigulosus (Temminck)
Crypturornis hellmayri (Brabourne and Chubb).

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OF THE

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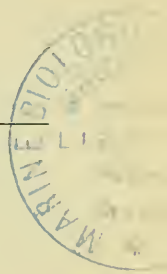

GENERAL NOTES.

NOTE ON A RARE PAROQUET FROM VENEZUELA.[1]

Mr. Ridgway described *Grammopsittaca lineola maculata* (Proc. Biol. Soc. Wash., 27, 1915, 106) from four trade skins supposed to have come from the interior of Venezuela. This locality he later changed to eastern Peru, with a question mark, as Salvadori (Cat. Birds Brit. Mus., 20, 1891, 240) had cast doubt upon Venezuela as the locality of Souancé's *Myiopsitta tigrina*.

In a small collection of Venezuelan birds collected by the well-known collector S. Briceño and presented to the U. S. National Museum by Mr. B. H. Swales, there is a fine specimen of this form, marked as a male, but probably a female, and taken at San Jacinto, Merida Region. This specimen agrees very well with the type of *maculata*, except it is greener on the head and back and the black on the central tail-feathers is more restricted; the lower parts are not so yellowish. In fact it is more like two of the other specimens in the typical series of *maculata* and this difference is probably sexual; it is dated May 24, and is probably adult. It measures: wing, 101; tail, 57; culmen, 11 mm. Briceño notes on the label that it is a wanderer to the Merida Region, but in any event this would seem to validate Souancé's record and as he founded his *Myiopsitta tigrina* (Rev. et Mag. Zool., 1856, 144), upon the Venezuelan bird his name will have to come into use for this form, which should be known in the future as *Bolborhynchus lineolus tigrinus* (Souancé).

—*J. H. Riley.*

AN ADDITIONAL NOTE ON THE NAME OF THE INCA TERN.

In these Proceedings (34, 1911, 38), I called attention to the fact that *Inca* Jardine can not be used as a generic name for the Inca Tern in place of *Nœnia* Boie, preoccupied. I then thought that *Larosterna* Blyth (Cat. Birds Mus. As. Soc., 1852, 293) was the next available name, but this proves not to be the case as Desmurs (Gay's Hist. Chile, Zool. I, 1847, 486) used *Noddi*, crediting the name to Cuvier, who did not use it in a generic sense. As the only species placed under *Noddi* by Desmurs was *Sterna inca* Lesson, it becomes the type by monotypy and the Inca Tern will have to be called *Noddi inca* (Lesson). *Noddi* Oken (Isis, 1817, 1183) is not available from this date nor was it used in a generic sense by Gray (List of the Genera of Birds, 1840, 79) as given by Waterhouse (Index Gen. Avium, 1889, 146). —*J. H. Riley.*

[1] Published by permission of the Secretary of the Smithsonian Institution.

NOTE ON ANAS ARCUATA HORSFIELD.

Matthews (Nov. Zool., 18, 1911, 9) has rejected *Anas arcuata* Horsfield, because Horsfield (Zool. Research. Java, 1824, pl. 64) only intended to rename or rather use what he considered an earlier MS. name of Cuvier for the bird he had previously described as *Anas javanica* (Tr. Zool. Soc. Lond., 13, 1921, 199). Horsfield defeated his purpose, however, when he published a named plate and diagnosis of an entirely different species and Salvadori (Cat. Birds Br. Mus., 27, 1895, 153) was correct in accepting Horsfield's name, founded upon the plate alone, even if the diagnosis should prove to be an entirely different species, but I can not see that it is. Ornithologists can continue to use *Dendrocygna arcuata* (Horsfield) until better reasons can be advanced than those brought forward by Mathews or more recently by Dr. Oberholser (Proc. Biol. Soc. Wash., 34, 1921, 166). —*J. H. Riley.*

NEW NAMES FOR THREE NORTH AMERICAN ASTERACEAE.

The name *Bidens involucrata* has been in use for some years for a species of beggar-tick of the central United States. As this name is preoccupied, the species may be renamed *Bidens polylepis*, in reference to the numerous outer phyllaries. The names of two species of *Erigeron* of the Western United States, being preoccupied, must also be changed. The synonymy of these plants is as follows:

Erigeron nevadincola Blake, nom. nov.

Erigeron nevadense A. Gray, Proc. Amer. Acad. **8**: 649. 1873. Not *E. nevadense* Wedd. Chlor. And. **1**: 194. 1857.

Erigeron compactus Blake, nom. nov.

Erigeron pulvinatus Rydb. Fl. Rocky Mts. 911. 1917. Not *E. pulvinatum* Wedd. Chlor. And. **1**: 194. *Pl. 33, f. B.* 1857.

Bidens polylepis Blake, nom. nov.

Coreopsis involucrata Nutt. Journ. Acad. Nat. Sci. Phila. **7**: 74. 1834.
Diodonta involucrata Nutt. Trans. Amer. Phil. Soc. n. ser. **7**: 361. 1841.
Bidens involucrata Britton, Bull. Torrey Club **20**: 281. 1893. Not *B. involucratus* Phil. Anal. Mus. Nac. Chile Bot. **1891**: 49. 1891.
—*S. F. Blake.*

CHANGE OF NAME.

Mr. Gerrit S. Miller, Jr., has kindly called my attention to the fact that the name *neglectus* given by me[1] to a race of the *Microtus californicus* group of meadow mice, was preoccupied by *Arvicola neglectus* [=*Microtus agrestis neglectus*] of Jenyns[2], a meadow mouse inhabiting northern Scotland. The subspecies must therefore be renamed, and may stand as *Microtus californicus sanctidiegi.* —*Remington Kellogg.*

[1]Kellogg, R., Univ. Calif. Publ. in Zool., vol. 21, No. 1, p. 31. 1918.
[2]Jenyns, L., Ann. & Mag. Nat. Hist. (1), vol. 7, No. 44, p. 270, June, 1841.

INOCOTIS REICHENBACH TO BE REPLACED BY PSEUDIBIS HODGSON.

The generic name *Inocotis* Reichenbach (Natürl. Syst. Vögel, 1853, p. XIV; type, *Ibis papillosa* Temminck) has been in current use for the Indian ibis described by Temminck as *Ibis papillosa*. It is, however, considerably antedated by *Pseudibis* Hodgson (Zool. Miscell., 1844, after June 29, p. 86), the type of which by monotypy is *Ibis papillosa*. As the latter is a perfectly valid name and is apparently not otherwise untenable, it should be employed in place of *Inocotis* Reichenbach, and the sole species referable to the group should be called *Pseudibis papillosa* (Temminck).

—*Harry C. Oberholser.*

ROSTRHAMUS LESSON VERSUS CYMINDES SPIX.

There appears in the text of the great work of Spix on the birds of Brazil (Avium Species Novae Brasil., I, 1824, p. 7) the generic name *Cymindes* in combination with the specific name *leucopygus* Spix, without comment or further citation. This generic name *Cymindes*, although apparently intended as an emendation of *Cymindis* Cuvier (Règne Animal, I, "1817" [December 7, 1816], p. 319), is nevertheless here a new name, and is not preoccupied by this latter, for it is, according to accepted codes of nomenclature, a distinct generic term, because possessing a different classical ending other than of gender. Since *Cymindes leucopygus* is the only species mentioned in connection with the generic name *Cymindes*, it is, of course, by monotypy, its type. The *Cymindes leucopygus* Spix, above cited, is a synonym of *Herpetotheres sociabilis* Vieillot; and since the name *Cymindes* Spix antedates *Rostrhamus* Lesson (Traité d'Ornith., Feb. 13, 1830, p. 55; type *Rostrhamus niger* Lesson = *Herpetotheres sociabilis* Vieillot) by several years, it must replace the latter; and the species now known as *Rostrhamus sociabilis* should hereafter therefore be called *Cymindes sociabilis* (Vieillot).

—*Harry C. Oberholser.*

PHOENICOTHRAUPIS CABANIS BECOMES HABIA BLYTH.

The generic name *Habia*, used by Blyth in his edition of Cuvier's 'Animal Kingdom,' 1840, page 184, was many years ago (The Auk, XIV, No. 1, January, 1897, pp. 39–42) discussed by Dr. Elliott Coues in connection with its application to the genus now commonly known as *Hedymeles* Cabanis, or *Zamelodia* Coues. No final disposition, however, was there made of this name. It was originally proposed in the following language:

"The Finch-Tanagers (*Habia*, Vieillot)—

"Have a thick, bulging, conical bill, as broad as high, the upper mandible of which is rounded above.

"Such are *Tan. flammiceps*, Pr. Max., *T. superciliosa*, *psittacina*, and *atricollis*, Spix, etc."

It is evident from this quotation that the name *Habia*, unless otherwise invalid, should be considered available for one of the groups represented by the four species mentioned in the original description. These with their modern equivalents are:

1. *Tan[agra]. flammiceps* Wied = *Phoenicothraupis rubica* (Vieillot).
2. "*T[anagra]. superciliosa*" = probably *Tanagra superciliaris* Spix (= *Saltator caerulescens* Vieillot).
3. [*Tanagra*] *psittacina* Spix = *Pitylus fuliginosus* (Daudin).
4. [*Tanagra*] *atricollis* Spix = *Saltator atricollis* Vieillot.

Since the type of *Habia* Blyth (1840) has, so far as we are aware, not yet been formally selected, we propose to designate as such the first species mentioned, *Tanagra flammiceps* Wied, a species now referred to the genus *Phoenicothraupis* as a synonym of *Phoenicothraupis rubica* Vieillot.

This generic name *Habia* Blyth might appear to be preoccupied by *Abia* Leach, used for a genus of Hymenoptera; but the two words are without doubt etymologically distinct, since *Abia* is formed from two Greek words —α primitive, and βία; while *Habia* is a native name evidently taken from Azara. Furthermore, *Abia* Agassiz (Index Universalis, 1846, p. 170), is an emendation of the vernacular name *Habia* Lesson (Traité d'Ornith., 1831, p. 464), thus evidently of the same Greek origin as Agassiz cites for *Abia* Leach, and being several years posterior, has no bearing on the availability of *Habia* Blyth. The *Habia* of Blyth is, therefore, to be considered an independent generic name on the same principle that *Pica* is now held to be different from *Picus*. This being the case, the generic name *Habia* Blyth 1840 must take the place of *Phoenicothraupis* Cabanis (Museum Heineanum, I, 1851, after October 23, p. 24; type by subsequent designation of Gray (Cat. Gen. and Subgen. Birds Brit. Mus., 1855, p. 72), *Saltator rubicus* Vieillot).

The species heretofore included in *Phoenicothraupis* will therefore stand as follows:

Habia rubica rubica (Vieillot)
Habia rubica amabilis (Berlepsch)
Habia rubica vinacea (Lawrence)
Habia rubica confinis (Bangs)
Habia rubica rubicoides (Lafresnaye)
Habia rubica nelsoni (Ridgway)
Habia rubica affinis (Nelson)
Habia rubica rosea (Nelson)
Habia alfaroana (Ridgway)
Habia rubra rubra (Vieillot)
Habia rubra peruviana (Taczanowski)
Habia rubra rhodinolaema (Salvin and Godman)
Habia salvini salvini (Berlepsch)
Habia salvini littoralis (Nelson)
Habia salvini discolor (Ridgway)
Habia salvini peninsularis (Ridgway)
Habia salvini insularis (Salvin)
Habia fuscicauda (Cabanis)
Habia cristata (Lawrence)
Habia gutturalis (Sclater).

—*Harry C. Oberholser.*

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PROCEEDINGS

OF THE

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DESCRIPTIONS OF NEW ORCHIDS FROM TROPICAL AMERICA WITH NOMENCLATORIAL CHANGES.

BY OAKES AMES.

In further study of the orchids of tropical America, the following plants appear to deserve recognition as new species or to require nomenclatorial attention.

Aa Rosei, sp. nov.

Similitudinem gerit cum *Aa Matthewsio* (Reichb. f.) Schltr. Herba gracilis. Caules erecti, vaginis scariosis arcte adpressis vestiti. Racemus densiflorus, cylindraceus. Bracteae albidae, acutae. Sepala lateralia glabra, oblonga, obtusa, uninervia. Sepalum dorsale ovatum, glabrum, obtusum, uninervium. Petala oblongo-elliptica, obtusa, uninervia. Labellum subgloboso-cucullatum, ostio valde contractum, marginibus basi excepta minute fimbriatulum, basi utrinque glandula ornatum. Columna brevis.

Roots fleshy, up to 5 mm. in diameter when dry. Leaves wanting at flowering time. Stems slender, 30–35 cm. tall, 1–3 mm. thick, invested with whitish closely appressed sheaths. Raceme about 4 cm. long, 5–6 mm. in diameter, cylindrical, many flowered. Floral bracts whitish, translucent, triangular-lanceolate, acuminate, acute. Rhachis puberulous, hairs flaccid, whitish. Pedicel abbreviated, together with the ovary 2 mm. long. Flowers more or less globose, crowded. Lateral sepals 2.25 mm. long, 1 mm. wide, oblong, concave, with a conspicuous mid-nerve, smooth. Upper sepal 2 mm. long, 1.25 mm. wide at base, triangular-ovate, obtuse, one-nerved. Petals about 2 mm. long, oblong-elliptic, obtuse, conspicuously one-nerved. Labellum 2.5 mm. long, subglobose-cucullate, margin fimbriate beyond the middle, basal margin entire; near the base a large gland is situated on each side. Column minute, dilated upward.

From the closely related *Aa macra* Schltr. this species differs in the smaller flowers, broader petals and shorter stems.

PERU, Cuzco. *Mr. & Mrs. J. N. Rose 19039.* September, 1914. (Type in United States National Herbarium 761630.)

Bletia Nelsonii, sp. nov.

Differt ab affinibus praesertim labello ecarinato. Radices et pseudobulbi non praestant. Folia tria (plus minusve?), anguste oblongo-lanceolata, utrinque attenuata, membranacea, subtus, in sicco, conspicue et prominenter nervosa, ad basim vaginantia. Scapus erectus, gracilis, vaginis brevibus instructus. Racemus laxus, plus minusve quindecimflorus. Flores in sicco pallidi. Sepala petalaque ligulato-spathulata. Labellum trilobatum, per discum prominenter nervosum. Lobi laterales permagni, irregulariter lobulati vel crenulati, valde obtusi. Lobus medius profunde retusus, irregulariter lobulatus. Columna gracilis.

Roots and pseudobulbs wanting. Leafy shoot about 76 cm. long, slender below, terminating in the narrow leaves which are attenuated at both ends, lamina of the largest leaf about 46 cm. long, 3.1 cm. wide near the middle, conspicuously three-nerved, the other nerves more or less prominent; narrowest leaf about 1.4 cm. wide. Scape slender, including the raceme about 76 cm. long, 5 mm. in diameter near the base, four-bracteate, the bracts sheathing and tubular, ± 2.5 cm. long. Raceme laxly flowered, up to 2 dm. long. Pedicels, with the ovary, 1.7–2 cm. long, subtended by lanceolate, acuminate, acute bracts 4.7 mm. long. Flowers yellowish in dried specimens (pinkish when fresh?) ± 3 cm. apart, 1.8 cm. long. Lateral sepals subspreading, ± 1.7 cm. long, 3 mm. wide, narrowly spathulate, abruptly acute, many-nerved. Upper sepal similar. Petals rhombic-spathulate, obtuse, 1.7 cm. long, 4.25 mm. wide, many-nerved. Labellum 1.7 cm. long, 1 cm. wide between the lateral lobes, obovate-lanceolate in outline, ecarinate, but prominently nerved longitudinally, lateral lobes very broad, angularly lobulate or crenulate on the margin, porrect; middle lobe subquadrate, deeply retuse, 4 mm. long, 6 mm. wide, irregularly crenate-dentate or lobulate on the margin. Column 1.3 cm. long, gradually dilated upward.

In habit similar to *Bletia Parkinsonii* Hook., which bears larger flowers with a very different labellum. In dried specimens the flowers are yellowish with inconspicuous pinkish stains here and there. Perhaps when fresh they are altogether pink in color.

MEXICO, Oaxaca, Vicinity of Choapam, *E. W. Nelson 913,* July 28–29, 1894. 3800–4500 feet altitude. (Type in United States National Herbarium.)

Malaxis mexicana, sp. nov.

Herba terrestris. Similitudinem gerit cum *M. fastigiata* Ktze. Folia duo, ovato-lanceolata, approximata. Flores in racemum subumbellatum dispositi. Sepala oblongo-elliptica. Petala linearia. Labellum antice trilobatum, lobulis obtusis.

Plant 2 dm. tall, resembling *M. fastigiata,* from which it is clearly separated by the three-lobed labellum. Stem tumid at the base, sheathed by several scarious bracts, 9 cm. long to the base of the lowermost leaf, in dried specimens longitudinally sulcate, naked above, bifoliate near the middle. Leaves about 4 cm. long, up to 2.5 cm. wide, ovate-lanceolate, acute.

Flowers numerous, crowded in a subumbellate raceme. Floral bracts much shorter than the pedicels of the flowers. Pedicels slender, together with the ovary 5.6 mm. long, ascending. Lateral sepals 3.25 mm. long, 1 mm. wide, oblong-elliptic, rounded at the tip, three-nerved. Upper sepal 3 mm. long, 1 mm. wide. Petals linear, 2 mm. long. Labellum ecallose, 2 mm. long, 1.5 mm. wide, rounded at the base, three-lobed in front, the lateral lobes triangular obtuse much exceeded by the oblong obtuse middle-lobe. Column minute.

MEXICO, State of Pueblo. Between Tepeaca and Santa Rosa. *J. N. Rose and Walter Hough 4735.* June 27, 1899. (Type in United States National Herbarium 346724.)

Malaxis Rosei, sp. nov.

Aff. *M. crispifoliae* (Reichb. f.) Ktze. Herba gracilis, bifoliata, foliis ovato-lanceolatis vel anguste ellipticis. Flores numerosi, in racemum umbellatum dispositi. Sepala oblonga. Petala linearia. Labellum subhastatum, lobulis basilaribus acutis.

Plant slender, 38.5 cm. tall. Roots fibrous, slender. Stem somewhat tumid at the base, 11 cm. long to the base of the lowermost leaf, about 20 cm. long from the uppermost leaf to the base of the inflorescence. Leaves 6 cm. apart, about 6 cm. long, 28–41 mm. wide, the lower one ovate-lanceolate, the upper one narrower, narrowly elliptical, subacute. Raceme umbelliform. Floral bracts about 1 mm. long, triangular, scale-like. Pedicels slender, together with the ovary up to 1 cm. long, obliquely ascending, glabrous. Lateral sepals 2.5 mm. long, about 1 mm. wide, somewhat convex, elliptic-oblong, obtuse, three-nerved. Upper sepal similar to the laterals, 2.75 mm. long, three-nerved. Petals linear, 2 mm. long. Labellum 2 mm. long, fleshy, cymbiform-hastate, subacute, with an erect uncinate lobule on each side near the base, tricarinate, the central keel broad, and conspicuously thickened, the lateral carinae membranaceous. Column minute, bilobulate.

Similar to *Malaxis crispifolia* (Reichb. f.) Ktze., but with different leaves, and short triangular bracts. In habit similar to *Malaxis rupestris* (Poepp. & Endl.) Ktze., but sufficiently distinct from it in the form of the labellum.

MEXICO, State of Durango. *J. N. Rose 3753.* August 16, 1897. (Type in United States National Herbarium 302747.)

Malaxis tepicana, sp. nov.

Planta monophylla. Racemus erectus, cylindraceus, multiflorus. Sepala lateralia oblongo-elliptica, obtusa, plus minusve obliqua, apice incrassata. Sepalum dorsale simile. Petala lineari-oblonga vel linearispathulata, valde obtusa. Labellum cordato-triangulum, ecallosum. Columna minuta.

Plant 24–27 cm. tall, rather stout. Stem tumid at base, sheathed by a large tubular loosely appressed bract, monophyllous. Leaf 6–8.5 cm. long, about 1.5 cm. wide (in *Rose 2034* up to 3.2 cm. wide), subacute or obtuse, at base sheathing the stem. Raceme up to 13 cm. long, cylindrical, about 6 mm. in diameter. Rhachis sulcate. Floral bracts minute, triangular.

Flowers numerous, densely crowded. Pedicel together with the ovary 2 mm. long. Lateral sepals 2 mm. long, about 1 mm. wide, oblong-elliptical, rounded and obtuse at the thickened apex, three-nerved, strongly convex. Upper sepal similar, 2.5 mm. long. Petals 2 mm. long, linear or linear-spathulate, obtuse, middle nerve conspicuous. Labellum 2 mm. long, nearly 3 mm. wide below the middle, cordate-triangular in outline, trulliform, four-nerved, without auricles, basal angles broadly triangular, acute, bluntly pointed at the apex, ecallose. Column .75 mm. long. Ovary smooth.

Allied to *Malaxis crispata* (Lindl.) Ames, but monophyllous, and without crisped ridges on the ovary.

MEXICO, Sierra Madre, Territorio de Tepic. Between Santa Gertrudis and Santa Teresa. *J. N. Rose 2097*. August 8, 1897. (Type in United States National Herbarium 300997.) *Rose 2034*, from the same region, collected August 7, 1897, between Dolores and Santa Gertrudis is apparently the same as *M. tepicana*. (U. S. Nat. Herb. 300931.)

The following changes are necessitated in accordance with the rules governing nomenclature.

Malaxis acianthoides (*Schltr.*) comb. nov. *Microstylis acianthoides* Schltr. in Fedde Repert. 15 (1918) 200.

Malaxis blephariglottis (*Schltr.*) comb. nov. *Microstylis blephariglottis* Schltr. in Fedde Repert. 12 (1913) 202.

Malaxis brachyrrhyncha (*Reichb.f.*) comb. nov. *Microstylis brachyrrhyncha* Reichb. f. in Flora 71 (1888) 152.

Malaxis Javesiae (*Reichb.f.*) comb. nov. *Microstylis Javesiae* Reichb. f. in Flora 71 (1888) 152.

Malaxis lepanthiflora (*Schltr.*) comb. nov. *Microstylis lepanthiflora* Schltr. in Fedde Repert. 15 (1918) 200.

Malaxis lepidota (*Finet*) comb. nov. *Microstylis lepidota* Finet in Bull. Soc. Bot. Fr. 54 (1907) 531.

Malaxis linguella (*Reichb.f.*) comb. nov. *Microstylis linguella* Reichb. f. in Flora 71 (1888) 153.

Malaxis minutiflora (*Schltr.*) comb. nov. *Microstylis minutiflora* Schltr. in Bull. Herb. Boiss. 7 (1899) 540.

Malaxis monticola (*Schltr.*) comb. nov. *Microstylis monticola* Schltr. in Fedde Repert. 3 (1906) 17.

Malaxis ocreata (*S. Wats.*) comb. nov. *Microstylis ocreata* S. Wats. in Proc. Am. Acad. 22 (1887) 453.

Malaxis pandurata (*Schltr.*) comb. nov. *Microstylis pandurata* Schltr. in Fedde Repert. 3 (1906) 77.

Malaxis Pittieri (*Schltr.*) comb. nov. *Microstylis Pittieri* Schltr. in Fedde Repert. 12 (1913) 203.

Malaxis platyglossa (*Robins. & Greenm.*) comb. nov. *Microstylis platyglossa* Robins. & Greenm. in Proc. Am. Acad. 32 (1896) 35.

Malaxis Pringlei (*S. Wats.*) comb. nov. *Microstylis Pringlei* S. Wats. in Proc. Am. Acad. 23 (1888) 282.

Malaxis streptopetala (*Robins. & Greenm.*) comb. nov. *Microstylis streptopetala* Robins. & Greenm. in Proc. Am. Acad. 32 (1896) 36.

Malaxis tenuis (*S. Wats.*) comb. nov. *Microstylis tenuis* S. Wats. in Proc. Am. Acad. 26 (1891) 152.

Malaxis Tonduzii (*Schltr.*) comb. nov. *Microstylis Tonduzii* Schltr. in Fedde Repert. 3 (1906) 106.

Malaxis Tuerckheimii (*Schltr.*) comb. nov. *Microstylis Tuerckheimii* Schltr. in Beihefte Bot. Centralbl. 36, Abt. 2 (1918) 382.

Malaxis Wercklei (*Schltr.*) comb. nov. *Microstylis Wercklei* Schltr. in Beihefte Bot. Centralbl. 36, Abt. 2 (1918) 382.

Pelexia Maxonii, sp. nov.

Radices incrassatae, validae. Folia longipetiolata, erecta, lamina ovato-elliptica, acuta. Scapus erectus, superne puberulus, bracteis vaginantibus, oblique acutis instructus. Racemus dense multiflorus, rhachide puberulus. Bracteae inflorescentiae elongatae, lineari-lanceolatae, acutae. Sepala lateralia patentia, ligulata, supra medium dilatata, prope apicem cymbiformia, extus pubescentia, mentum acutum formantia. Sepalum dorsale ligulatum, acuminatum, subacutum, extus pubescens. Petala basi angustata, spathulata, acuta, margine anteriore ciliato-pubescenti. Labellum supra medium dilatatum, prope apicem constrictum, infra apicem callo ∧-formi instructum, basi utrinque auriculatum, auriculis incrassatis. Columna elongata.

Plant 29 cm. tall. Leaves few (two in the type), long petioled; petioles 8–10 cm. long, sheathing at base, erect or spreading, in dried specimens tinged with purple, lamina membranaceous, 12–14 cm. long, 4.5–5.8 cm. wide, in dried specimens conspicuously netted-veined, ovate-elliptical, acute, rounded at the base, glabrous. Scape with the raceme ± 28 cm. tall, in part concealed by sheathing bracts, glandular-pubescent above. Raceme densely many flowered, ± 12 cm. long, about 4 cm. in diameter, rhachis pubescent. Flowers with pedicellate ovary about 3 cm. long, subtended by linear, acute bracts, ± 1.7 cm. long. Lateral sepals including the mentum 1.7 cm. long, narrowed below the middle, linear-lanceolate, cymbiform near the tip, carinate, pubescent on the outside. Free part of the mentum about 3.5 mm. long. Upper sepal 1.3 cm. long, 3.5 mm. wide, oblanceolate, abruptly acuminate, acute, sparsely pubescent. Petals adherent to the upper sepal, spathulate-oblanceolate, acute, 12 mm. long, ciliate-pubescent on the anterior margin, one-nerved. Labellum 1.7 cm. long, 4.75 mm. wide above the middle, narrowed toward the base, dilated above the middle into an oblong-elliptical, acute plate, constricted by a fold on each side, and with an inverted V-shaped thickening 2 mm. from the tip, sagittate at base, the sagittal divisions thickened and about 2 mm. long. Column dilated above. Anther triangular-cordate, acute.

CUBA. "Posesion de Starck" southeast of Jaguey, Yateras, Oriente. *William R. Maxon 4437.* May 3, 1907. Altitude 450–525 meters. Terrestial on rich forest slopes. (Type in United States National Herbarium 523200.)

Platystele compacta, comb. nov.

Stelis compacta Ames Orch. 3 (1908) 76, t. 53. The genus Platystele is at present confined to Central America and as now limited contains only

two species, *P. bulbinella* Schltr. from Costa Rica and the present species which was described originally from material collected in Guatemala by H. von Tuerckheim. These species are very closely related, *P. bulbinella* being a much stouter plant than *P. compacta*, with longer leaves and a more robust raceme, but with very similar flowers. An examination of more material than I have seen may prove that the Costa Rican species is simply a larger form of *P. compacta*.

Pleurothallis palliolata, sp. nov.

Caules secundarii elongati, erecti, monophylli, prope basim paucivaginati, vaginis tubulatis. Folium permagnum, ovato-lanceolatum, longe acuminatum, acutum, basi rotundatum, amplexicaule. Flores duo, permagni, roseo-striati, labello roseo-purpureo. Pedunculus abbreviatus, quam folium multo brevior. Sepala lateralia usque ad apicem cohaerentia, leviter convexa, ovato-lanceolata, acuta, quam sepalum dorsale multo minora. Sepalum dorsale galeiforme, decem-nervium, laminam semiellipticam formans. Petala carnosa, anguste falcata, acuta, apice valde curvata, inerassata, triquetra, marginibus serrato-dentata. Labellum carnosum, rotundato-cordatum, infra medium utrinque angulatum, trinervium, nervis claviformibus, basi transverse inerassatum. Unguis trinervius. Columna carnosa, superne dilatata.

Secondary stems erect, 11–14 cm. long, about 2 mm. in diameter, invested below the middle with several brownish, closely appressed sheaths, monophyllous. Leaf 9–10 cm. long, 3.8 cm. wide, coriaceous, rigid, ovate-lanceolate, acuminate, acute, rounded at the base, clasping the stem. Peduncle about 2.5 cm. long, bearing two large flowers about 1 cm. apart, arising from a complanate sheath. Lateral sepals united to form an ovate-lanceolate acute lamina, 1.5 cm. long, 1 cm. wide, about twice longer than the petals. Upper sepal about 2 cm. long, 1 cm. wide when flattened out, hood-shaped, semi-elliptical in outline, obtuse. Petals 7 mm. long, 2 mm. wide near the middle, linear-falcate, sharply bent backward near the tip, thickened along the middle and at the tip, margin fimbriate-dentate. Labellum 6 mm. long, 6.5 mm. wide, orbicular-cordate, fleshy, with four callus-like thickenings at base in front of the three-nerved, oblong claw; abruptly narrowed below the middle with a reëntrant angle on each side; three-nerved, the lateral nerves slenderly claviform in outline, the middle one broadly clavate above the middle. Column about 2 mm. long, fleshy.

Allied to *P. cardiothallis* Reichb. f. from which it differs in the cordate labellum and coarsely fringed petals. *P. costaricensis* Schltr. is closely allied, but differs in having subequal sepals and an ovate-oblong labellum. *P. phyllocardia* Reichb. f. is very similar to *P. palliolata* in having toothed petals as shown by Reichenbach's type at Vienna, but the sepals are different, the coherent laterals being equal to the upper sepal.

COSTA RICA. *Lankester* $\frac{192}{1920}$. (Type in Hort. Bot. Reg. Kew.)

Stelis Johnsonii, sp. nov.

Similitudinem gerit cum *S. microchila* Schltr. Radices albidae, fibratae. Caules secondarii abbreviati, monophylli. Folium oblanceolatum, coriaceum, quam inflorescentia brevius. Pedunculus gracilis, multiflorus. Flores in sicco brunneo-rubentes, minuti. Sepala triangulari-ovata, trinervia. Petala flabellata, labello multo majora, apice incrassata, trinervia. Labellum parvum, circuitu rhombicum, apice incrassatum, obtusum, prope medium callo instructum. Columna basi angustata, apice utrinque lobulo ornata.

Epiphyte. From base of secondary stem to tip of inflorescence 8.5 cm. high. Secondary stems erect, about 1 cm. long, when young concealed by two elongated tubular sheaths, monophyllous. Leaf 2.5–4 cm. long, up to 6 mm. wide, oblanceolate, obtuse, minutely bidentate at the apex, narrowed toward the base into a sulcate petiole about 4 mm. long. Peduncles with the lax-flowered raceme up to 7.5 cm. long, solitary or rarely two, unibracteate below the raceme. Raceme 3.5–4.5 cm. long. Floral bracts 1.5–2 mm. long, obliquely infundibuliform, acuminate, acute, shorter than the pedicels. Flowers twelve more or less, reddish-brown in dried specimens, 3 mm. apart on the rhachis. Pedicel together with the ovary up to 2.5 mm. long. Sepals adherent at base, 1.5 mm. long, about 1.5 mm. wide, triangular-ovate, obtuse, conspicuously three-nerved. Petals 1 mm. long, 1.25 mm. wide near the apex, fan-shaped, thickened at the tip, three-nerved. Labellum .5 mm. long, rhombic in outline, triangular in side-view, margins erect, apex thickened, near the apex provided with a large fleshy callus. Column slender near the base, dilated upwards.

Allied to *Stelis bidentata* Schltr. from which it is distinguished by wider leaves and a different lip. In habit similar to the Costa Rican *S. obscurata* Reichb. f.

GUATEMALA, Department Alta Verapaz, Chamá. *Harry Johnson 252.* May 15, 1920. Epiphytic on trees, flowers reddish, odorless. Altitude 900 feet. (Type in Herbarium of Oakes Ames 22114. Duplicate type in United States National Herbarium 1081106.)

Bussey Institution, Harvard University.

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PROCEEDINGS

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NEW FORMS OF FINCHES AND TANAGERS FROM TROPICAL AMERICA.

BY W. E. CLYDE TODD.

In the course of a critical study of the Finches and Tanagers in the collection of the Carnegie Museum a number of apparently unnamed forms have been discovered. One new species and eleven new subspecies belonging to these groups are described in the present paper, which is the ninth of the series to appear in these Proceedings, and is governed by the same rules as were observed in the earlier communications. Acknowledgments are due to the authorities of the American Museum of Natural History, the Academy of Natural Sciences of Philadelphia, the U. S. National Museum, the Bureau of Biological Survey, and the Museum of Comparative Zoology for the loan of material which has been invaluable for comparison.

Poospiza pectoralis, sp. nov.

Above plain gray; remiges dusky, the fourth, fifth, and sixth primaries margined externally with white, the remaining remiges with mouse gray, the innermost secondaries with very broad and conspicuous grayish white outer edgings; lesser and middle coverts gray like the back; greater coverts with bases and inner webs black, and outer webs mostly white, passing into mouse gray on the innermost; alula and primary-coverts brownish black; inner margins of remiges whitish; tail dusky, the middle pair of rectrices more grayish, the two outer ones white except on the inner web towards the base, and the third pair with a large white spot on the inner web towards the tip; sides of head black, relieved by a wide white superciliary stripe and a white spot on the lower eyelid; throat white, followed by a large black spot occupying the upper part of the breast, continuous with the gray of the sides of the breast and body; rest of under parts white, except the crissum, which is tawny; "iris and feet brown; bill black above, brownish gray below." Wing (type), 61; tail, 53; bill, 8.5; tarsus, 17.

Of this apparently new species only a single specimen has been received. It differs very decidedly from *Poospiza torquata* (D'Orbigny and Lafresnaye) in its shorter, relatively stouter bill, much broader black pectoral collar, much wider and more whitish outer margins to the tertiaries, and in particular by having much more white on the tail, this color on the outer rectrix reaching nearly to the base of the feather, and cut off *obliquely*, not almost straight across on the inner web, as in *torquata*. The middle rectrices are grayish, duller than the back, not dusky black.

Type, No. 43,650, Collection Carnegie Museum, adult male; Guanacos, Prov. Cordillera, Bolivia, August 21, 1909; José Steinbach.

Arremon aurantiirostris strictocollaris, subsp. nov.

Similar to *Arremon aurantiirostris aurantiirostris* Lafresnaye of Panama and the Pacific slope of Costa Rica, but averaging slightly brighter, more yellowish green above; black pectoral band narrower; under parts more extensively white; and the sides, flanks, and crissum paler.

Four adult males from eastern Panama in the collection of the American Museum of Natural History agree with the type in the above characters as compared with a series of true *aurantiirostris*, and evidently represent a form which in some respects approaches *A. spectabilis occidentalis* Hellmayr, without, however, any indication of intergrading with that form.

Type, No. 63,859, Collection Carnegie Museum, adult male; Sautata, Rio Atrato, Colombia, January 22, 1918; M. A. Carriker, Jr.

Sicalis luteiventris flavissima, subsp. nov.

Similar to *Sicalis luteiventris minor* Cabanis of British Guiana, but larger, with conspicuously heavier bill, and with the upper parts more broadly streaked. Similar also to *S. luteiventris luteiventris* (Meyen), but under parts more richly and more uniformly yellow, especially posteriorly. Wing (type), 69; tail, 49; bill, 10.5; tarsus, 17.

This is apparently the *Sicalis chapmani* of Hellmayr, Nov. Zool., XV, 1908, 34, from the islands of Marajo and Mexiana, but not the *S. chapmani* of Ridgway, from which the new form differs decidedly in being less greenish yellow above, with the dusky streaks much broader, and slightly duller yellow below. The sides of the head, the breast, and the sides in the male are shaded with yellowish olive, instead of being plain yellow, as in *chapmani*, and the female has a distinctly yellow throat, as in *luteiventris*, so that I would range it with this latter form, and not with *chapmani*, in which the female has a whitish throat.

Sicalis "arvensis" is in all probability a synonym of *S. luteiventris*, and in any case the latter name has a year's priority over the former as the specific designation of this group.

Type, No. 68,308, Collection Carnegie Museum, adult male; Rocana, Pará, North Brazil; May 13, 1918; Samuel M. Klages.

Sporophila americana dispar, subsp. nov.

Similar to *Sporophila americana americana* (Gmelin) of French Guiana, but size constantly larger; white alar spot in the male averaging larger, and rump more conspicuously mottled with white (not grayish); female also

very different, being much duller, brownish or grayish olive above and dull whitish below, shaded with buffy. The female of true *americana* is usually rich brown above and strongly buffy below. Wing (type), 61; tail, 50; bill, 11.5; tarsus, 16.5.

These characters are readily apparent in a series of sixteen specimens from the lower Amazon as compared with another of fifty specimens from French Guiana, the type-locality.

Type, No. 72,050, Collection Carnegie Museum, adult male; Santarem, Brazil, April 15, 1919; Samuel M. Klages.

Sporophila castaneiventris rostrata, subsp. nov.

Similar to *Sporophila castaneiventris castaneiventris* Cabanis of Guiana, but size averaging slightly larger; bill much heavier (8 mm. long and 7.5 mm. deep in type); and chestnut of under parts slightly deeper.

The much heavier bill of this form is its best character, but the color-difference, although slight, appears to be sufficiently constant in a series of twenty-two specimens to justify its formal separation from the Guiana birds (eleven skins from French Guiana).

Type, No. 71,511, Collection Carnegie Museum, adult male; Santarem, Brazil, March 26, 1919; Samuel M. Klages.

Pitylus grossus saturatus, subsp. nov.

Similar to *Pitylus grossus grossus* (Linnæus) of Guiana, Brazil, etc., but males darker, more slaty blue, in general coloration, and females almost uniform dark olive gray below, with little or no buffy brown shade.

Although Mr. Ridgway (Bull. U. S. Nat. Mus., No. 50, I, 1901, 652) confesses his inability to distinguish specimens from different parts of the range of this widely distributed species, I find that with an excellent series of birds from the type-locality (French Guiana) before me for comparison the birds from Costa Rica and Colombia can be told at a glance by their darker coloration. Males are darker, more slaty blue, but it is in the females that the difference is most pronounced. Guiana females are strongly shaded below (especially posteriorly) with buffy brown, while Costa Rica females are almost uniform dark olive gray below. Colombian birds are easily referable to this dark form. I select as type an adult female.

Type, No. 23,493, Collection Carnegie Museum, adult female; Guacimo, Costa Rica, September 25, 1903; M. A. Carriker, Jr.

Tangara boliviana lateralis, subsp. nov.

Differs from *Tangara boliviana boliviana* (Bonaparte) of Bolivia, Peru, etc., in the following respects: the yellow of the under parts, although varying somewhat, is appreciably paler; the blue tips of the feathers on the sides and flanks are shorter, allowing the black subterminal spots to show more (these parts, therefore, appear to be more heavily spotted); the blue margins to the middle wing-coverts are narrower; and the lesser wing-coverts usually have a touch of greenish.

These characters are obvious in the series examined, and would seem to suffice to distinguish the bird of the lower Amazon from that of Bolivia.

Hellmayr (Nov. Zool., XIV, 1907, 7), it is true, disallows the differences, but his material was very scanty.

Type, No. 78,031, Collection Carnegie Museum, adult male; Apacy, Rio Tapajoz, Brazil, April 29, 1920; Samuel M. Klages.

Tangara cayana fulvescens, subsp. nov.

Similar to *Tangara cayana cayana* (Linnæus) of Guiana, etc., but larger, and decidedly paler throughout. Wing (type), 75; tail, 54; bill, 11.5; tarsus, 18.5.

Colombian specimens of *Tangara cayana*, including examples from both sides of the Eastern Andes, are readily separable from a series from French Guiana by their larger size and conspicuously paler general coloration, this particularly evident in the males. They can not be referred to the form *cyanolaima* of Bonaparte, said to be from eastern Peru (Rio Negro), since this is described as being brighter throughout, with the blue of the throat very conspicuous, which is certainly not the case with the Colombian birds. I accordingly have no alternative but to give the latter a distinctive name, since their characters are obvious and constant.

Type, No. 60,360, Collection Carnegie Museum, adult male; Palmar, Boyaca, Colombia, April 16, 1917; M. A. Carriker, Jr.

Thraupis palmarum atripennis, subsp. nov.

Similar to *Thraupis palmarum melanoptera* (Sclater) of Guiana, Brazil, Bolivia, etc., but somewhat smaller and generally darker, the wings blacker and more uniform, and tail darker. Wing (type), 93; tail, 69; bill, 13.5; tarsus, 20.5.

Birds of this species from Costa Rica and Colombia (west of the Andes) differ from a series from Guiana and the lower Amazon in their rather smaller size and darker coloration throughout, the wing-coverts and bases of the remiges being dull dark green (between vetiver green and grayish olive), while the head is duller, darker green, and the gloss of the body-plumage in adult males is more purely bluish, less purplish in tone. The remiges have practically no lighter edgings, even in fresh plumage; the tail is darker also. The *Tanagra melanoptera* of Sclater, based on the bird of eastern Peru (which is undoubtedly the same as that of eastern Colombia and of Bolivia), certainly does not apply to the present race, although so given by all recent authors, and a new name is required, which I here supply.

Type, No. 13,305, Collection Carnegie Museum, adult male; Guapiles, Costa Rica, March 11, 1903; M. A. Carriker, Jr.

Piranga saira rosacea, subsp. nov.

Similar to *Piranga saira saira* (Spix) of Brazil, but male much paler, more pinkish throughout. The back is between Kaiser brown and ferruginous, brightening into English red on the pileum; the ventral surface is between flame scarlet and orange chrome in the brightest individual, and Mikado orange in the palest. Females are indistinguishable in any way.

The discovery of a distinct race of *saira* so close to the range of the typical one (which we have from the Rio Quisera, in the Province of Velasco, north

of Chiquitos) is interesting indeed. It is probably a local form with a restricted range, which with only one specimen available might have been set down as an extreme individual variant, but with four adult males at hand, all showing the same characters, it is evident that a geographical race is involved.

Type, No. 80,182, Collection Carnegie Museum, adult male; Palmarito, Rio San Julian, Chiquitos, Bolivia, May 24, 1918; José Steinbach.

Mitrospingus cassinii costaricensis, subsp. nov.

Similar to *Mitrospingus casinii cassinii* (Lawrence) of Panama and western Colombia, but under parts darker, more greenish, less yellowish; the throat darker gray; and the crissum less rufescent.

This is one of the species which has hitherto been supposed to range unchanged from western Ecuador to Costa Rica, but comparison of a series of nicely prepared skins from western Colombia with another from Costa Rica develops the fact that the two are readily distinguishable from each other. Colombian birds are much brighter below—nearer sulphine yellow on the breast, with the crissum decidedly rufescent (near Sudan brown), tinged with olive. In Costa Rican birds the breast is darker (deep warbler green), the throat is darker gray, less strongly contrasted with the sides of the head, and the crissum is more olivaceous, less rufescent. The species was described from Panama, and birds from the type-locality are obviously nearer the series from Colombia than to that from Costa Rica, leaving the latter to be described as the new form.

Type, No. 27,947, Collection Carnegie Museum, adult male; El Hogar, Costa Rica, November 14, 1906; M. A. Carriker, Jr.

Chlorospingus canigularis conspicillatus, subsp. nov.

Similar to *Chlorospingus canigularis canigularis* (Lafresnaye) of the Central and Eastern Andes of Colombia, but yellowish pectoral band slightly deeper in color and much wider, and olive green of the sides and flanks more extended.

Dr. Chapman could find no racial differences in his series from the Colombian Andes, but when uniformly and smoothly made up specimens are compared the differences between the series from the Eastern Andes and that from the Western Andes stand out very distinctly. The latter have the greenish yellow breast-band slightly deeper in color and fully twice as wide, while the olive green of the sides and flanks is more extended; the size also averages larger.

Hemispingus veneris Bonaparte (Compt. Rend., XXXVII, 1853, 922) is the only synonym of this species. It was described from a specimen whose exact locality is not known, but which was taken during the voyage of the "Venus." Sclater, who examined the type in the Paris Museum, considered it to be the same as Lafresnaye's *canigularis*. None of the other birds taken on the "Venus" voyage came from this part of Colombia, but there was one which was described from the "Bogotá" region, and very probably the type of *veneris* is from the same part.

Type, No. 67,547, Collection Carnegie Museum, adult male; Bitaco Valley, Colombia, July 6, 1918; M. A. Carriker, Jr.

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PROCEEDINGS

OF THE

BIOLOGICAL SOCIETY OF WASHINGTON

CHANGES IN NAMES OF AMERICAN RHYNCHOTA CHIEFLY EMESINAE.

BY W. L. McATEE AND J. R. MALLOCH.

Owing to the extreme and touching solicitude of certain of our contemporaries for the taxonomic welfare of groups of Hemiptera recently specialized upon by us, we deem it advisable to place on record the subjoined changes in nomenclature which otherwise would have been withheld until publication of comprehensive systematic treatises now well advanced.

EMESINAE.

Barce Uhler = **Metapterus** Costa.
Luteva Dohrn = **Ploiaria** Scopoli.
Ploiariopsis Champion = **Ploiaria** Scopoli.
Ploiaria carolina Banks not Herrich-Schäffer = **Ploiaria hirticornis** Banks.
Ploiariola Reuter = **Ploiariodes** White.
Ploiariodes californica Banks = **Ploiariodes rubromaculata** Blackburn.
Ploiariodes euryale Kirkaldy = **Ploiariodes rubromaculata** Blackburn.
Ploiaria maculata Haldeman = **Ploiariodes culiciformis** De Geer.
Ploiariodes errabunda Banks not Say = **Ploiariodes culiciformis** De Geer.
Ploiariodes tuberculata Banks = **Ploiariodes errabunda** Say.
Ploiariodes hirtipes Banks = **Ploiariodes vagabunda** Linnaeus var. **pilosa** Fieber.
Ploiariodes canadensis Parshley = **Ploiariodes vagabunda** Linnaeus var. **pilosa** Fieber.
Luteva arizonensis Banks is a **Stenolemus**.
Myiagreutes Bergroth is a subgenus of **Westermannias** Kirkaldy.

ISOMETOPIDAE.

Isometopus of American authors is not *Isometopus* of Fieber and we propose for it **Corticoris** new name. Genotype *Isometopus pulchellus* Heidemann.

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PROCEEDINGS

OF THE

BIOLOGICAL SOCIETY OF WASHINGTON

FURTHER OBSERVATIONS ON SOME EXTINCT ELEPHANTS.

BY OLIVER P. HAY.

Professor Henry F. Osborn has recently (Amer. Mus. Novitates, No. 41, July 8, 1922) issued a paper in which he deals with the Pleistocene elephants of North America. I venture to discuss his important conclusions.

Professor Osborn takes up first *Elephas columbi* and announces that the real *E. columbi* is not the animal that we have been describing under this name. Inasmuch as the elephant which has hitherto borne this honorable title is one well known and widely distributed, it is imperative that the name shall not be disturbed except on evidence that can not reasonably be disputed. I believe that such evidence has not been presented.

In the American Museum is a lower hindermost molar (No. 13707) found at Charleston, South Carolina, which Professor Osborn has made the "neotype" of *E. columbi* (his fig. 3 B). This tooth is said to have in its unworn condition 16 plates, of which only 8 had come into use. With this tooth a plaster cast of Falconer's imperfect type of the species is compared and identified as belonging to the same species. A drawing (Osborn's fig. 1) purports to represent the type tooth restored. Professor Osborn therefore restricts the name *E. columbi* to a form whose lower hindermost molars have only 16 or 17 plates and not more than 6 plates in 100 mm. He further concludes that this species is closely related to or identical with *Elephas imperator*.

Now, the fact is that the "neotype" is a much-worn tooth and does not represent the original number of plates; some are cer-

tainly missing from the front. If the reader will examine A. Leith Adams's monograph on British fossil elephants, plate III, figure 1; plate IV, figure 1; and plate XI, figure 1; or my paper on the "Mammals of the Pleistocene of Iowa" (Iowa Geol. Surv., vol. XXIII), plate LVII, figures 9, 10; plate LV, figure 2; plate LVII, figure 3; and especially plate LXII, figure 4, he will find that a complete lower molar of an elephant possesses a strong anterior root which is distinctly separated from the more or less coalesced hinder roots. This root supports three, four, or possibly five plates. When the tooth is worn down so that this root is gone, one can no longer be certain just how many front plates are missing. That is the condition of Professor Osborn's "neotype." I examined this tooth before Professor Osborn published his paper; and, without knowing what use he intended to make of it, I noted that it lacked this root and some front plates. The tooth quite certainly belongs to *E. columbi*, as we have been describing the species. It will be noticed that in Professor Osborn's restoration of the type tooth (his fig. 1) he has not supplied the front root.

Having, as he supposed, restricted the name *Elephas columbi* to a little-known form, Professor Osborn turned his attention to the great body of elephants which he supposed was now left without a specific title, and on these he bestowed the name *Elephas jeffersonii*. As its type he chose the beautifully preserved and nearly complete skeleton found in Indiana and now mounted in the American Museum. To the same species he referred a large skull (No. 10261) found at Cincinnati and now in the U. S. National Museum. Unfortunately, however, for this tribute to our illustrious statesman and naturalist, this Cincinnati skull had previously been described by myself as *Elephas boreus*. This was done in a paper entitled "Observations on some extinct elephants," privately issued and widely distributed on June 12, 1922. Professor Osborn's name becomes therefore a synonym.

It was evidently Professor Osborn's intention to include under *E. jeffersonii* not only his type, his paratypes (his fig. 11), and the Cincinnati skull, but the elephants abundantly represented by teeth which have about 7 plates in a 100 mm. line and thick festooned enamel. In doing this it seems to me that he has ignored almost every character except size of teeth and thickness

of plates. I grant that Osborn's type, his paratypes (his figs. 11, 12), and various other specimens have only 7 or 8 plates in 100 mm. and that they are co-specific with his *E. jeffersonii*, my *E. boreus*. Inasmuch as teeth of the forms that I have been referring to *E. columbi* and *E. primigenius* have typically 24 plates in 100 mm. it follows that if teeth of both forms have the same length there will be the same number of plates in 100 mm. The teeth of *E. columbi* are usually the larger, but sometimes those of *E. boreus* (hitherto referred to *E. primigenius*) attain equal size, as in the case of Osborn's paratypes from Zanesville, Ohio. Nevertheless, there are usually differences in the thickness and the complications of the enamel, in the shape of the plates, often strongly bent in *E. columbi*, and in the outlines of the tooth.

Under his *Elephas jeffersonii* Osborn (his p. 15) has included, besides the type skull and the Cincinnati skull, two others in the American Museum. These are a skull from Whitman County, Washington, and another from Dallas, Texas. He states that the cranial characters of the Cincinnati skull are wholly similar to those of the three skulls in the American Museum, and he calls attention to the differences existing between these "relatively long, broad, and shallow crania and the relatively short, narrow, and deep crania of *E. primigenius*."

In my paper of June 12 I have from careful measurements constructed diagrams of a skull from Siberia (figs. 1, 2), of the Dallas skull (figs. 3, 4), of the Cincinnati skull (figs. 5, 6), and of the Whitman County skull (figs. 9, 10). I believe that these diagrams give correct views of the architecture of these crania. The skull taken as type of *E. jeffersonii* (diagram not published) is essentially the same as that of *E. boreus*. The differences between these and *E. primigenius* (= *E. mammonteus*) noted by Osborn are in general correctly stated; and these characters taken in connection with the swollen occiput of *E. boreus* justify the separation of the American form. On the other hand, the skull of *E. boreus* is wholly different from the Whitman County skull. Measured by the unit I have used for the length, this cranium is much wider and much higher than either *E. mammonteus* or *E. boreus*. In the latter the height is hardly one percent greater than the length; in *E. mammonteus* the height is 12 percent greater; in the Whitman County skull, 28 percent greater.

The occiput of the last mentioned skull is more inflated than in the others and the vertex lies in front of the foramen magnum. I believe that this skull belongs to *E. columbi*, as that species has been recognized.

The skull from Dallas, Texas, presents another and very different type of architecture. It is very narrow and very low, the height being only 84 percent of the unit of length, and the occiput is flat. This skull appears to me to be referable to *E. imperator*. The three fine skulls in the American Museum belong to three distinct species.

That the elephants which now bear the name *Elephas boreus* are specifically different from those which have been called *E. columbi* is indicated likewise by the geographical distribution of the two forms. *Elephas boreus* is abundant in the glaciated region of our northern States and Canada and around the glacial border, but extremely rare in the southern States. *E. columbi* is abundant southward and especially on the western plains; but it is not so often found in the glaciated region as is *E. boreus*.

Professor Osborn in his paper of July 8 has published an interesting figure of upper teeth of an elephant (his fig. 8) found in Indiana. On plate LIX of the twenty-third volume of the Iowa Geological Survey, I published a figure of very similar teeth found at Milwaukee, Wisconsin, and preserved in the Public Museum of that city. The hindermost molar had just begun to suffer wear. In the U. S. National Museum are right and left hindermost molars (No. 2195) of similar form, found at Ashland, Cass County, Illinois; also an upper left hindermost molar (No. 4761) hardly different, discovered in Wayne Township, Darke County, Ohio. The peculiarity of all these teeth is the low elongated form and the approximate parallelism of the upper and the lower borders. Inasmuch as the molar descends at a nearly right angle with the grinding face of the tooth in front it seems probable that the skull was short. Professor Osborn has referred his specimen to *Elephas primigenius;* but I find no teeth from Alaska or the Old World which present similar characters. I believe that a hitherto unrecognized species is indicated. This I propose to call *Elephas roosevelti* in honor of another statesman and naturalist, one whose multifarious interest led him to pursue living elephants in their African wilds.

Elephas roosevelti, new species.

Type specimen.	Upper and lower hindermost molars, No. 2195, U. S. National Museum.
Type locality.	Ashland, Cass County, Illinois.
Type formation.	Pleistocene.
Diagnosis.	Hindermost molars long and low, the base and the summit approximately parallel, consisting apparently of 25 plates; of these 8 in a 100 mm. line; enamel thin, delicate, and little folded.

The Ashland teeth are chosen because with them came the nearly complete lower right hindermost molar. The length of the molars is close to 300 mm, the height 170 mm, the width of the upper teeth 90 mm., of the lower 85 mm.

It appears to the writer that one may justly object to the nomenclature applied by Professor Osborn to some of his subfamilies. It is generally recognized that the name of the family and that of the subfamily are to be based on a type genus. Examples of Professor Osborn's deviation from this wholesome rule are found in his paper of 1921 (Amer. Mus. Novitates No. 1). Rhynchorostrinae is used instead of Rhynchotheriinae, Longirostrinae instead of Gomphotheriinae, Brevirostrinae instead of Anancinae, and Mastodontinae instead of Mammutinae; while the Mammontinae appear to include no genus except *Elephas*. It is a singular fact that Professor Osborn on the same page arranges the genus *Elephas* under two subfamilies. In case the mammoths are worthy of subfamily rank, to be called Mammontinae, there ought to be a corresponding genus, but so far as the writer knows no such genus has yet been proposed.

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PROCEEDINGS

OF THE

BIOLOGICAL SOCIETY OF WASHINGTON

NEW SPECIES OF CRABS FROM CURAÇAO.[1]

BY MARY J. RATHBUN.

The specimens described were obtained at Curaçao by Prof. C. J. van der Horst, of the Zoological Laboratory, Amsterdam, and form part of a larger collection, a list of which will be published by the Dutch Zoological Society. The types of the new species are the property of the Amsterdam Museum.

Randallia curacaoensis, sp. nov.

Holotype.—Female, ovigerous; Spanish Water, Curaçao.

Measurements.—Female holotype, length of carapace 8.4 mm., width 7.5 mm.

Description.—Carapace subcircular, covered, except on anterior and antero-lateral portions, with large, unequal, close-set pustulous granules; intestinal region well defined, cardiac region ill defined, gastric and hepatic regions not delimited. The tuberculate antero-lateral margin terminates at the swollen pterygostomian protuberance. Intestinal region without lobes or spines. Front bilobed, median point not visible from above and exceeded by the projecting epistome. Chelipeds covered with flat granulations, coarse on the merus, becoming gradually finer until near the fingers. Legs slender, finely granulate. Abdomen and sternum coarsely granulate.

Xanthias vestitus, sp. nov.

Holotype.—Male; Spanish Harbor, Curaçao.

Measurements.—Male holotype, length of carapace 4.6 mm., width 6.4 mm.

Description.—Covered, except ends of fingers, with a very short feltlike pubescence which conceals granules and obscures antero-lateral teeth. When the felt is removed, the regions are fairly well indicated, a deep H at middle of carapace. Fine sparse granules on marginal regions. Four shallow, blunt antero-lateral teeth besides angle of orbit. Fronto-orbital distance a little over half as great as width of carapace, front less than a third the width of carapace. Carpus and manus of chelipeds covered with granules, fingers light-colored, fixed finger horizontal except at tip. Legs smooth.

[1]Published by permission of C. J. van der Horst.

Pinnixa vanderhorsti, sp. nov.

Holotype.—Male; Spanish Harbor, Curaçao.

Measurements.—Male holotype, length of carapace 3.4 mm., width 6 mm.

Description.—Carapace narrowing toward the sides, smooth, punctate, without posterior ridge; lateral marginal line disappearing toward hepatic region. Front curved downward and fringed with hair. Orbits in dorsal view inclined forward and outward. Chelipeds small, upper half of outer surface hairy; a longitudinal ridge through middle of manus; fingers horizontal. Legs broad, third pair much the largest. Terminal segment of abdomen semi-oval, its proximal end only slightly broader than the contiguous portion of preceding segment.

Pinnixa arenicola, sp. nov.

Holotype.—Male; Spanish Harbor, Curaçao.

Measurements.—Male holotype, length of carapace 3 mm., width 6 mm.

Description.—Allied to the preceding. Posterior margin of carapace longer, antero-lateral region higher; front narrower, sides more convergent; cornea smaller. Propodus of third leg narrower at proximal end, dactylus slenderer and more curved. Third segment of abdomen transversely oblong, proximal and distal margins slightly bilobed by a median emargination, sides faintly sinuous; fourth segment very broad, having two transverse crescentic wings united medially by a very narrow neck; fifth and sixth segments together urn-shaped.

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PROCEEDINGS

OF THE

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A NEW POCKET MOUSE FROM IDAHO.

BY E. A. GOLDMAN.

The common pocket mouse, *Perognathus parvus* and subspecies, has a wide range in the arid interior from southern Washington south along the eastern side of the Sierra Nevada to southeastern California, and eastward through Idaho and Nevada to Wyoming. Slight, irregular, geographic variants in size and color are numerous and several fairly well-marked subspecies have been recognized. The discovery of the new form described below is one of the results of recent field work in the extensive but little known lava fields, in the Snake River desert region of southern Idaho.

Perognathus parvus idahoensis, subsp. nov.

IDAHO POCKET MOUSE.

Type from Echo Crater, 20 miles southwest of Arco, Blaine County, southern Idaho. No. 236,394, ♂ adult, U. S. National Museum (Biological Survey Collection), collected by L. J. Goldman, June 14, 1921. Original number 2752.

Geographic distribution.—Known only from the type locality.

General characters.—Size large; color darkest of the known forms of *Perognathus parvus;* back blackish; lighter element in pelage of upperparts light vinaceous buffy, most like *P. p. parvus* in general tone (not light ochraceous buffy as in *P. p. olivaceus*), the blackish admixture strongly predominant; skull large, and very broad.

Color (type).—Upperparts finely mixed light vinaceous buff[1] and black, the black predominant especially over lower part of back, and the buffy element purest along lateral line of sides; chin, throat, and inner sides of forearms dull whitish; chest pure white to roots of hairs; belly and inner sides of hind legs overlaid with light ochraceous buff; the under color light plumbeous; outer sides of forelimbs dusky, the dark color here continuous with that of sides; heels black; ears blackish, except marginal white spots, which by contrast are conspicuous; feet white; tail clothed above with

[1] Ridgway, Color Standards and Nomenclature, 1912.

mixed black and buffy hairs, becoming nearly pure black toward tip, pale buffy below.

Skull.—Essentially like those of *P. p. parvus* and *P. p. olivaceus*, but larger than is typical of either, and decidedly broader, especially across mastoid bullae.

Measurements (type).—Total length, 189; tail vertebrae, 102; hind foot, 24. An adult male topotype, 184; 96; 24. *Skull* (type): Greatest length, 27.5; greatest mastoid breadth, 14.5; interorbital breadth, 5.9; length of nasals, 10.4; greatest width of interparietal, 5.9; maxillary toothrow, 4.

Remarks.—The remarkably dark color of *P. p. idahoensis*, distinctive at a glance, appears to be associated with that of its lava field environment. Additional specimens from the general region of the type locality are likely to reveal a rather extensive range in the unexplored Snake River desert country of southern Idaho. Specimens from southeastern Oregon, assigned to *P. p. parvus*, are rather dark in color and indicate probable intergradation. In dark coloration the form here described contrasts strongly with its pale geographic neighbor, *P. p. clarus*, of eastern Idaho and southwestern Wyoming.

Specimens examined.—Two, from the type locality.

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PROCEEDINGS

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NEW FROGS FROM MINNESOTA.

BY ALFRED C. WEED.

In studying any species of animal it is a great advantage to be able to see a large number of specimens. In the present case, F. J. Burns & Co., produce dealers of Chicago, very kindly gave me free access to the frogs they have brought here for sale. In some cases locality records are poor but, in general, we are able to be fairly sure of the name of the place from which the shipment was made and it seems likely that the frogs were actually caught within a few miles of the shipping point.

One of the forms here described has been recognized for some years and considered simply as an aberrant form of *Rana pipiens*. The other is apparently undescribed, although it seems to be very well marked and present in fairly large numbers in a rather restricted region.

There may be some question as to the propriety of describing species based on color characters alone, especially in a group where the color variation of any particular individual may be so great as in the frogs. However the author feels that the differences shown are so constant and of such a degree as to warrant their receiving a name and that their exact status, whether specific, subspecific or varietal must be determined by future examination, for which he has neither the time nor the equipment. It seems probable that the final decision as to the validity of these species must rest on the result of carefully controlled breeding experiments.

Both of these forms are sufficiently different from *Rana pipiens* to be readily seen in a tank containing several thousand frogs of that species.

Rana burnsi, sp. nov.

Measurements of the type specimen:

Snout to vent	74	mm.
Length of head	22	mm.
" to rear of eye	19.5	mm.
" of eye	9	mm.
" of ear drum	6	mm.
" from vent to heel	69	mm.
" from vent to knee	31	mm.
" from knee to heel	38	mm.
" of hind foot	58	mm.
Width of head at rear of ear drum	24	mm.

The web of the hind foot is quite variable. In the type it appears as a keel on the sides of about two and one half joints of the longest toe, but is clearly visible practically to the end of that toe. In some other specimens it is much larger and stretches almost directly across between the tips of the toes. There is every degree of variation between the two conditions.

The color is extremely variable in each individual according to conditions of fear, etc., as well as in response to the color of the environment but is very uniform in the species as a whole.

The color of this species is usually some shade of green or brown, varying from the color of an old watersoaked board to a very light mist gray and to a light apple green. About a third of the specimens have irregular black spots on arms or legs or both. These spots never approach the condition of regular cross barring so often seen in *Rana pipiens*. They look more like blots of ink that might have gotten there accidentally.

The brown color changes of *Rana burnsi* match almost exactly the similar changes of the Wood Frog, *Rana sylvatica*, the main difference being that the latter species seldom shows a strong green color and always has a black patch at the side of the head, which is lacking in *Rana burnsi*.

Rana burnsi has been known for some years and is generally considered simply an immaculate form of *Rana pipiens*. Breeding experiments may show that this view is correct. The author believes, however, that there are sufficient grounds for giving it a separate specific name, in the present state of our knowledge of the group.

The species seems to be confined to northern Iowa and southern Minnesota, with possibly some stragglers in western Illinois and Wisconsin. It seems to differ from *Rana pipiens* only in color but no intergrading forms have yet been found in the examination of many thousand specimens. In size it is a very little smaller than *Rana pipiens*. That is, the very largest individuals of the latter species are a little larger than the very largest ones of the former. In length of leg and in the webbing of the hind foot *Rana pipiens* is extremely variable and *Rana burnsi* is within the range of variation. Some specimens of *Rana pipiens* have very short legs while others have very long ones. In different individuals the heel reaches from eye to end of snout. Some specimens have two whole joints of the longest toe free from the web while others have almost as large a web as a Bullfrog.

The measurements given are of the type, which is number 3065 of the reptile collection of Field Museum of Natural History. This specimen, and twenty paratypes, was received from New London, Kandiyohi County, Minnesota. There are about eighty other specimens of this species in the collections of Field Museum, from Spicer, Kandiyohi County, Minnesota; Okabena, Jackson County, Minnesota; Rothsay, Wilkin County, Minnesota and Astoria, Deuel County, South Dakota.

Rana burnsi is named in honor of Messrs. F. J. Burns and J. J. Burns, whose courtesy and cooperation made it possible to get the specimens on which this paper is based.

Rana kandiyohi, sp. nov.

Measurements of the type specimen:

Snout to vent	69.0 mm.
Length of head	21.5 mm.
" to rear of eye	17.5 mm.
" of eye	9.0 mm.
" of ear drum	5.0 mm.
" from vent to heel	67.0 mm.
" from vent to knee	31.0 mm.
" from knee to heel	36.0 mm.
" of hind foot	56.0 mm.
Width of head at rear of ear drum	24.0 mm.

The web of the hind foot is variable. In the type it is continued as a rather broad keel to the end of the longest toe. In one paratype it reaches about the middle of the distal joint of the longest toe. In the other paratype it extends on the next to last joint of longest toe as a very narrow keel.

Typical specimens of this species show a color pattern which suggests a blending of *Rana pipiens* and *Rana septentrionalis.* It is as though the black spots of *Rana pipiens* had been superposed on the mottled color of *septentrionalis.* The spots are not as evenly rounded as in *pipiens* but show a tendency to fuse with the mottlings between them. The vermiculate mottlings are carried down on the legs and feet and are there combined with a dark barring like that of especially dark colored examples of *Rana pipiens.*

The mottled color of the back is carried well down on the sides of this species and fades gradually into the white of the under parts. The light stripes along the glandular ridges are similar to those in *Rana pipiens* and sometimes in *Rana burnsi.*

The ground color is represented by small spots and lines between the darker parts of the mottlings. It is about the same as in *Rana pipiens.* Sometimes the mottlings are as dark as the spots. At other times they are lighter.

The type, Number 3066, Field Museum of Natural History, was received from New London, Kandiyohi County, Minnesota. Two other specimens, paratypes, came from an unknown locality in Minnesota. About thirty other specimens were found in lots of frogs from Rothsay, Wilkin County, Minnesota, and from Astoria, Deuel County, South Dakota.

There is no indication of any intergradation in color pattern except in specimens coming from the immediate vicinity of Lake Traverse and of Big Stone Lake on the boundary between Minnesota and the Dakotas.

Almost all the Leopard Frogs from a region perhaps one hundred miles north and south along the boundary between Minnesota on the east and North and South Dakota on the west show more or less plainly a tendency to intergrade with the species under discussion. In fact, there seem to be more specimens with typical coloration of *Rana kandiyohi* than with that of *Rana pipiens.*

The taxonomic value of this variation can not be well understood until the frogs of the region west of Big Stone Lake can be critically studied. From the data already at hand we may suppose *Rana kandiyohi* to be a form developed along the upper course of the Minnesota River, either as a variant of *Rana pipiens* or as a result of hybridization with some other form.

If this species is only a variant of *Rana pipiens,* produced by some ecologic factor, we may expect to find it more common a little farther west, or perhaps even supplanting the latter species at the western limit of the range of frogs in the arid belt.

The name *Rana kandiyohi* is proposed with some misgivings because of the small knowledge we have of the form and its relation to other frogs and to its environment. Localities from which we have received it are, with one exception, in the southwest quarter of Minnesota. The other record is barely across the state line in South Dakota. It is to be hoped that careful field studies may be made of the frogs of the region within a hundred miles of Big Stone Lake in order that ecologic studies may supplement our present knowledge of the group.

In conclusion, it may be well to mention that males of *Rana kandiyohi* kept alive in the aquarium have been croaking vigorously for some weeks and that their note is quite distinct from that of some *Rana pipiens* from the vicinity of Chicago. The note of the Leopard Frog is more or less a succession of syllables and may be almost represented by striking stones together rather rapidly. That of *Rana kandiyohi* is more in the nature of a croak and might be represented by grinding two stones together under considerable pressure.

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PROCEEDINGS

OF THE

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THREE NEW NEOTROPICAL SALIENTIA.

BY THOMAS BARBOUR.

During the summer of 1921 Dr. E. R. Dunn was, as usual, engaged in field work for the Museum of Comparative Zoology. During a journey in Mexico, he found the first two novelties discussed herewith, while the third is from another source which has been ever helpful in building up our representation of South American amphibians, and reptiles as well.

Eleutherodactylus dunnii, sp. nov.

Type M. C. Z., No. 8242, from Cerro de los Estrapajos, somewhat west and a little higher than the city of Jalapa, Mexico. E. R. Dunn, collector, August, 1921. A second specimen from the type locality and a third from the village of Xico nearby.

Description.—Tongue narrow, oval, slightly nicked behind; vomerine teeth in two short, heavy, oblique series some distance behind the chonae; these two sharply converging series do not meet by a considerable space, the interval separating them being about equal to the distance of the upper end of each series from the nearest choana; nostril much nearer tip of snout than eye, its distance from the eye being greater than the diameter of the latter; upper eyelid nearly as wide as interorbital space; tympanum large, round, well defined, considerably over half the diameter of the eye, its distance from the eye being just over one-half of its own diameter; fingers with tips undilated, first and second fingers equal in length; toes without apical dilatation, two metatarsal tubercles, the outer round and conical, the inner oblong and much more prominent; a rather indistinct tarsal fold; the hind limbs being extended along the side, the heel just reaches beyond the tip of the snout, the hind limbs being placed vertically to the axis of the body; the heels overlap considerably; skin above with finely scattered granules on back, a faintly defined granular ridge down the middle of the back, belly smooth with a strong discoidal fold and thighs heavily granulate.

Dimensions.—

Tip of snout to vent	35	mm.
Width of head	14	mm.
Diameter of eye	4.4	mm.
Tympanum	2.8	mm.
Fore leg from axilla	23	mm.
Hind leg from vent	67	mm.

The coloration of the three specimens secured by Mr. Dunn, two from the type locality and one from Xico near Jalapa, is singularly uniform.

The dorsal surface is lichen gray, rather smoky with tiny black spots scattered over the head and back; the gray limbs are faintly banded with ill-defined cross bands. There is a black spot above the tympanum extending to the insertion of the fore limb; three dark spots below the eye extending to the lip margin. The two posterior spots come directly to the eye margin; the anterior spot is separated by a short distance from the eye margin itself; another distinct spot on each side of the snout extending anteriorly from the nostril to the tip of the nose. The smallest of the three specimens is slightly more reddish than the other two. The markings of the head, however, are entirely characteristic.

I can not find that this species has been described. There is a possibility that it may be what Brocchi confused with Guenther's *E. conspicillatus*. The type locality of this form was, of course, in Ecuador but Brocchi had something from Orizaba which, erroneously, he identified with *conspicillatus* and I should judge from the meagre description given that he might have had the frog now before me, except that from his description the tympanum does not appear to have been so large.

Syrrhopus mystaceus, sp. nov.

Type M. C. Z. No. 8241 from Jalapa, Mexico. Collected by E. R. Dunn, August, 1921.

Habit similar to that of *Eleutherodactylus sallaei*. Tongue small, oblong and entire; vomerine teeth absent; nostril much nearer tip of snout than eye; its distance from the eye being equal to the orbital diameter; tympanum very large and round, distinctly larger than the eye; fingers without dilated tips; first and second and fourth about equal in length; toes with no trace of web and with no apical discs; metatarsal tubercles small and weak; soles, however, with small scattered tubercles; a faint tarsal fold; the hind limb being carried forward along the body; the heel reaches well beyond the tip of the snout; the heels overlap when the hind limbs are placed vertically to the axis of the body; skin above with many small tubercles and plicate rugosities; a faintly defined mid-dorsal granular ridge and a pair of granular ridges converge from the eyes to the mid-dorsal region and then extending backward run parallel to each other as far as the sacrum; several long but irregular lateral glandular folds also present; upper surface of thighs with scattered tubercles like the back; posterior aspects of thighs closely and strongly granulate; belly and anterior aspect of thighs smooth; a strongly developed ventral discoidal fold.

Dimensions.— Tip of snout to vent 26 mm.
Width of head 9.5 mm.
Diameter of eye 2.8 mm.
Tympanum 3.2 mm.
Fore leg from axilla 15 mm.
Hind leg from vent 43 mm.

The color of the unique specimen is a dark mahogany brown above, ashy below; the hind limbs are faintly cross-barred; there is a light dusky band

between the eyes and a light spot near the middle of the back. Along the lip on each side there is a broad brilliant silvery white streak extending from the tip of the snout to the fore limb and passing under the tympanum but not extending to the upper lip margin along which there is a dark iron-grey streak which borders the silvery zone below.

It seems worth while to recognize the genus Syrrhopus for convenience, if for no other reason. The status of the two species which inhabit the United States is reasonably well known. The status, however, of the various names applied to Mexican forms is in the most dire confusion and races of Phylobates and of Syrrhopus seem to be hopelessly confused. However, this type is so very distinct that in spite of the chaos in which the genus stands, it seems reasonably safe to consider it an unknown and undescribed species.

Among many interesting increments to our collection from Southern South America, some of the most important being from my valued friend Senor don Carlos Reed, appeared this frog, apparently hitherto unknown.

Paludicola illotus, sp. nov.

Type M. C. Z. No. 8314. An adult from the Cordillera west of Mendoza, about 7000 alt., Argentina. Don Carlos Reed collector.

This species may be readily diagnosed in that it possesses vomerine teeth, has no evident tympanum nor lumbar gland; and has no tarsal tubercle and while the back is very warty, there are no longitudinal folds.

Description.—Tongue rounded, entire; vomerine teeth in two well developed series, between the choanae, converging very slightly backward, the distance between the series being very slightly greater than the distance of each series from its neighboring choana; nostril nearer tip of snout than eye, its distance from the orbit being slightly less than the eye's diameter; upper eyelid about the width of the interorbital space; no tympanum, a heavy fold over the tympanic area; fingers rather long, first and second subequal; toes without trace of web; the hind limb being extended along the body, the heel reaches the eye; the hind limb being placed vertically to the axis of the body the heels are not quite in contact; there is a very slight trace of web between the toes; the skin of the back is covered with many rather rounded warty tubercles of varying sizes; the belly is smooth with a discoidal fold moderately indicated. The lower surfaces of the thighs are coarsely granular and all the ventral surfaces of back and limbs present irregularly scattered tubercles appearing very natural at first sight. They are, however, beyond doubt pathological and are probably caused by subdermal colonies of protozoan (?gregarine) parasites.

The color above is dull plumbeous with faint traces of a darker marbling and very faint dark cross bars on the limbs. Below the color is uniform plumbeous throughout, a little lighter than the back.

Dimensions.— Tip of snout to vent 46 mm.
Width of head 18 mm.
Diameter of eye 5 mm.
Fore leg from axilla 34 mm.
Hind leg from vent 75 mm.

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PROCEEDINGS

OF THE

BIOLOGICAL SOCIETY OF WASHINGTON

A NEW PHALANGER FROM CELEBES.[1]

BY GERRIT S. MILLER, JR., AND N. HOLLISTER.

In the extensive series of Phalangers collected by Mr. H. C. Raven in North and Middle Celebes, while working under the auspices of Dr. W. L. Abbott, are three skins and skulls of a new species, allied to *Phalanger ursinus*. These were taken by Mr. Raven at Rano Rano in the high mountains east of Lake Lindoe and north of Lake Poso, a locality where he secured several of the most striking novelties in his collection, including the remarkable new rodent genus *Melasmothrix* and the pigmy tarsier (*Tarsius pumilus*) which we have described in previous papers.[2]

Phalanger furvus, sp. nov.

Type from Rano Rano, Middle Celebes. No. 219,473, U. S. National Museum, skin and skull of adult ♂; collected January 5, 1918, by H. C. Raven; original number 3369.

Diagnosis.—In general like *Phalanger ursinus* (Temminck), but larger, with longer, softer fur (hairs on withers 50 mm. in length); ears small, unmarked, and completely hidden in hairs of head; general coloration black. Skull heavy with larger teeth than in *P. ursinus;* the larger premolar particularly robust.

Color of type.—Upperparts, including flanks, from eyes to naked portion of tail, and outer sides of arms and legs rich glossy black; underfur and bases of long hairs clear rich chestnut. Around eyes, cheeks, and chin grayish. Middle underparts from throat to tail, and inner sides of arms and legs dark amber brown, sharply marked from black of flanks, the hairs with dark chestnut bases. An older female and a younger male are colored essentially as in the type.

Measurements of type.—Head and body, 610; tail vertebrae, 580; hind foot, 120. Skull: Greatest length, 106.5; condylobasal length, 101.5; zygomatic breadth, 66.2; length of nasals, 37.2; greatest breadth of both

[1]Published here by permission of the Secretary of the Smithsonian Institution.

[2]Proc. Biol. Soc. Washington, vol. 34, pp. 67–76, 93–104. 1921.

nasals combined, 21.9; upper tooth row, entire, 56.1; upper molars and large premolar, 34.2; mandible, 81.6; lower molars and large premolar, 36.3.

Specimens examined.—Three, from the type locality.

Remarks.—Mr. Raven records the weight of this species as 22 pounds, while his largest specimens of *P. ursinus* weighed 15 and 16 pounds. Occasional specimens of *ursinus* are quite dark, especially when in worn pelage, but no specimen in the collection, representing numerous localities in North and Middle Celebes, south as far as Pinedapa, just north of Rano Rano, approaches in any measure the rich glossy black of the new species, which is further sharply differentiated from all specimens of *ursinus* by the small, unmarked ears and the great relative size of the large upper premolar.

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PROCEEDINGS

OF THE

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NEW PLANTS FROM SOUTH AND CENTRAL AMERICA COLLECTED BY WILSON POPENOE.

BY S. F. BLAKE.

In the course of identification of the specimens collected by Wilson Popenoe during his recent trip to Central and South America for the Office of Foreign Seed and Plant Introduction I have found nine apparently unnamed species. These are described here in order that the names may be available for use in papers to be published elsewhere by Mr. Popenoe on the results of his trip.

Tibouchina asperipilis Blake, sp. nov.

Shrub 1.3 m. high, much branched; branches terete, densely hispid-pilose, the hairs wide-spreading, about 0.7 mm. long, minutely hispidulous throughout, with blackish base and brownish tip; internodes 1 to 3 cm. long; petioles similarly pubescent, 2 to 4 mm. long; leaf blades ovate or the uppermost suborbicular-ovate, 1 to 2.8 cm. long, 1 to 1.6 cm. wide, acute, at base broadly rounded or slightly cordate, minutely serrulate, above dark green, bullate, densely pilose-setose with ascending yellowish-white hairs with adnate bases, beneath paler green, densely spreading-hispid-pilose and hispidulous along all the veins and veinlets, essentially glabrous between them, 5-plinerved or obscurely 7-plinerved (the lateral nerves shortly coalescent at base), the veins and veinlets impressed above, foveolate-reticulate beneath; cymes 3-flowered, on mostly paired terminal branchlets, subtended by 2 free bracts 7 mm. long or less; pedicels 1 to 4 mm. long; calyx 2-bracteolate at base, the bracteoles oblong, about 2 mm. long, deciduous; calyx tube campanulate, 7 to 8 mm. long, densely setose-pilose with subappressed or ascending hairs, the lobes 5, lance-ovate, 8 to 10 mm. long, strigose and ciliate, contracted near middle, with acute 3-nerved herbaceous tips, persistent; petals 5, "purple," obovate, ciliate, 1.5 cm. long; stamens 10, alternately unequal, glabrous throughout, the filaments 8 and 12 mm. long, the subulate beaked anthers 7 and 9 mm. long, the free portions of the connectives 0.5 and 2.8 mm. long, with 2 large rounded golden lobes at base; ovary strigose at apex, 5-celled, shortly 5-lobed.

Type in the U. S. National Herbarium, no. 1067084, collected in open

places on hillsides, Loja, Ecuador, altitude 2255 meters, April 8, 1921, by Wilson Popenoe (no. 1313).

This attractive species is said to be a common shrub in the region about Loja. It is a member of the Section *Diotanthera*, coming in the group containing species 149 and 150 in Cogniaux's monograph, and is readily distinguished by its pubescence and small ovate leaves.

Centronia tunguraguae Blake, sp. nov.

Small tree, 6 m. high; branchlets quadrangular, flattened below the nodes, 4-grooved, densely ferruginous- or sordid-lepidote, becoming glabrate and greenish; petioles slender, 1 to 3.5 cm. long, lepidote beneath, stellate-tomentose above; blades oval or elliptic, 9 to 15 cm. long, 2.8 to 6.8 cm. wide, acuminate to an obtuse apex, cuneate or somewhat rounded-cuneate at base, crenate-denticulate except toward base (teeth about 30 pairs, callous, obtuse, about 0.5 mm. high), subcoriaceous, above deep green, callous-bullate, essentially glabrous, with impressed venation, beneath densely whitish- or sordid-ferruginous-pubescent with short stellate hairs and longer pinnately branched hairs, strongly 5-plinerved and prominent-reticulate; flowers in clusters of 1 to 4 in the terminal and subterminal axils, the floral leaves not seen; pedicels erect, 1 to 1.5 cm. long, densely stellate-lepidote and somewhat pilose with many-celled hairs; calyx densely ferruginous-stellate-lepidote and less densely ascending-pilose, in bud turbinate-obovoid, obtusely apiculate, 16 mm. long, 10 mm. thick, in anthesis irregularly calyptrate near middle, thick and subcoriaceous throughout; petals 6, "deep salmon-color," broadly obovate, truncate-rounded, 18 mm. long, 14 to 16 mm. wide, glabrous; stamens 12, equal, the linear-subulate glabrous filaments 11 mm. long, the lance-subulate anthers 8.5 mm. long, the free portion of the connectives 1.5 mm. long, with a short blunt posterior appendage and a subequal blunt spur; ovary 6-celled, glabrous, depressed at apex, shortly and bluntly 6-lobed; style thickish, glabrous, 2 cm. long.

Type in the U. S. National Herbarium, no. 1067083, collected by roadside at the settlement Pondoa, on slopes of Mt. Tunguragua, Ecuador, altitude 2745 meters, March 10, 1921, by Wilson Popenoe (no. 1296).

In Cogniaux's monograph this species comes nearest *Centronia brachycera* (Naud.) Triana, of Colombia, which is described as having the leaves rounded at base, pedicels 5 to 10 mm. long, calyx limb thinly membranaceous, petals 2.5 cm. long, and anthers minutely appendaged dorsally. The anthers in *C. tunguraguae* show the peculiar apparent reversal of dorsality noted by Triana[1] in some species of the genus, and correspond precisely with the figure of those of *C. excelsa* (Bonpl.) Triana given by Triana (pl. 5, f. 59a). That species, however, is said to have 7-plinerved leaves with rounded or subcordate base, and numerous herbaceous stems only 2 to 3 meters high. *C. tunguraguae* is described by the collector as rare.

Gaultheria pubiflora Blake, sp. nov.

Shrub 1.5 m. high; stem rimose; branches leafy, densely hispid with ascending or subappressed deep brown hairs; petioles hispid, 1 to 2.5 mm.

[1] Trans. Linn. Soc. 28: 165. 1872.

long; leaf blades ovate, 1 to 1.8 cm. long, 5 to 9 mm. wide, acute, callous-tipped, rounded at base, hispid-serrulate, above somewhat shining and along costa puberulous, beneath sparsely ascending-hispid with lepidote-tuberculate-based hairs, prominulous-reticulate on both sides; flowers solitary in the axils toward ends of branches, or the lowest axil rarely bearing a leafy-bracted raceme; pedicels becoming decurved, 8 to 10 mm. long, densely griseous-puberulous with spreading hairs and less densely rufous-hispid with upcurved hairs, bracteate at extreme base; calyx 3.2 to 4 mm. long, 5-lobed about half its length, puberulous above, the lobes ovate, obtusish, densely ciliolate; corolla "white," ovoid-urceolate, 7 to 8 mm. long, rather densely puberulous outside, within pilose from shortly above the base to the base of the 5 short suborbicular lobes; stamens 10, the lance-ovate filaments 2 mm. long, densely pilose dorsally and finely glandular-puberulous, essentially glabrous ventrally, the anther sacs (body) 0.5 mm. long, the shorter neck of each cell divided into two awns 0.6 mm. long; capsule 5-celled, subglobose, pubescent, entirely included in the accrescent somewhat fleshy calyx, the whole 6 mm. thick.

Type in the U. S. National Herbarium, no. 1059982, collected near Albán, Cundinamarca, Colombia, altitude 2685 meters, October 5, 1920, by Wilson Popenoe (no. 1133).

Related to *Gaultheria anastomosans* (L. f.) H. B. K., but distinguished from that and from all related species by its externally pubescent corolla.

Disterigma margaricoccum Blake, sp. nov.

Shrub 1 to 1.5 m. high; older branches fuscous, hispid-pilose or glabrescent; young branches erect, brownish, densely hispid-pilose with short spreading hairs, densely leafy; petioles broad, 1 mm. long, more or less pubescent; leaf blades narrowly lanceolate or elliptic-lanceolate, 6.5 to 11 mm. long, 1.2 to 2 mm. wide, acuminate, at base rounded or acute, entire, coriaceous, somewhat boat-shaped, short-ciliate, sometimes sparsely pubescent above toward base, whitish-green, veinless above, the costa and 2 or 3 pairs of lateral veins obscure or conspicuous beneath; flowers axillary, solitary, forming dense leafy pseudo-racemes 1 to 2 cm. long at base or apex of branches; pedicels becoming deflexed, spreading-puberulous, 1.5 to 4 mm. long; bracts at base of calyx 2, suborbicular, 2.5 to 3 mm. long, rounded or obtuse, ciliolate, equalling the calyx tube, several-striate; calyx tube globose-campanulate, 2.8 mm. long, obtusely 4-angled, essentially glabrous, the 4 teeth deltoid, 1.4 mm. long, acutish, ciliolate and sparsely pubescent dorsally toward apex; corolla urceolate, "rich rose-pink," 9 mm. long, about 5 mm. thick, glabrous, fleshy, the 4 teeth deltoid, recurved, acutish, 1.3 mm. long; stamens 8, equal, attached to extreme base of corolla, the filaments narrowly linear-subulate, 5.2 mm. long, densely spreading-hispid-pilose, the anthers muriculate especially below, 3.5 mm. long (body 1.5 mm., tubules 2 mm.); ovary 4-celled; "berry translucent, white, 6 to 12 mm. thick; seeds few, minute."

Type in the U. S. National Herbarium, no. 1067082, collected in paramo on slopes of Mt. Tunguragua, Ecuador, altitude 3050–3965 meters, March 8, 1921, by Wilson Popenoe (no. 1287).

Mr. Popenoe describes this species as a very common shrub on the slopes of Mt. Tunguragua between the altitudes above mentioned, with very juicy, tender and crisp, pleasantly subacid berries which resemble large pearls in appearance. The native name of the plant is "chirimote." It is allied to *D. weberbaueri* Hörold, of Peru, which is described as a shrub only 0.5 meter high, with white corolla, filaments 4 mm. long, and anthers 3 mm. long (body 2 mm., tubules 1 mm.).[1]

Disterigma popenoei Blake, sp. nov.

Shrub 2 m. high; branches whitish, becoming purplish brown, glutinous, puberulous, glabrate, leafy; petioles stout, puberulous, 2 to 4 mm. long; leaf blades oval or elliptic-ovate, 2.4 to 3.4 cm. long, 1.2 to 2 cm. wide, acute to obtuse, cuneate at base, coriaceous, entire, glabrous, strongly 3-nerved from the base, the nerves impressed above, prominent beneath, usually evanescent below apex of leaf, the secondaries obscure or obsolete; flowers in dense axillary fascicles of about 6, sessile or on pedicels 1.5 mm. long or less; bractlets 2 at base of calyx, equaling calyx tube, suborbicular, 2 mm. long, ciliolate with subglandular hairs; calyx tube campanulate-subglobose, obtusely quadrangular, glabrous, equaling the limb (1.5 mm. long), the 4 deltoid acutish teeth glabrous or slightly ciliate; corolla "white," cylindric, 6 to 7 mm. long (with teeth straightened out), the tube rather densely spreading-puberulous outside, pilose-barbate within except at base, the 4 recurved lobes triangular-ovate, glabrous, about 2.2 mm. long; stamens 8, the filaments linear, pilose on both sides except toward the glabrous base, 5 mm. long, the anther sacs 1 mm. long, the tubes 2 mm. long, conic; ovary 4-celled; "berry translucent white, about 6 mm. thick."

Type in the U. S. National Herbarium, no. 1059983, collected in very moist scrub in the Cordillera de Zamora, east of Loja, Ecuador, altitude 2440–2475 meters, April 11, 1921, by Wilson Popenoe (no. 1323).

This species, which occurs abundantly in cool and moist places in the Cordillera of Zamora between 2440 and 2745 meters, bears the native name "tira," which seems to be restricted to it. The fruit is said to be similar to that of the "chirimote" (*Disterigma margaricoccum*, described above), but is not quite as good. The species is very distinct from any previously described in its comparatively large strongly 3-nerved leaves and numerous flowers with the corolla densely puberulous outside.

Macleania irazuensis Blake, sp. nov.

Shrub 2 m. high; branch stout, subterete, glabrous; petioles stout, glabrous, 5 mm. long; leaf blades elliptic-ovate, 4 to 6 cm. long, 2 to 2.6 cm. wide, obtuse, broadly rounded or subcordate at base, entire, coriaceous, glabrous, marginate, penninerved, the lateral veins 4 or 5 pairs, sparsely branched, obscure or prominulous above, prominulous beneath; racemes axillary and terminal, 1.5 to 3.8 cm. long, glabrous, erect, straight, becoming loosely flowered in age, about 10-flowered, the bracts ovate, rounded,

[1] I take this opportunity to transfer to *Disteribma* a Costa Rican species of this genus described under *Vaccinium* several years ago.

Disterigma dissimile Blake.—*Vaccinium dissimile* Blake, Journ. Bot. 53: 271. 1915.

persistent, 2 to 3 mm. long; pedicels stout, glabrous, articulate with calyx, 1.2 to 1.6 cm. long, bearing near or below middle a pair of oval or suborbicular bracts about 2 mm. long; calyx glabrous, the campanulate subterete tube 4 mm. long, the limb 3 to 4 mm. high, 9 mm. wide, the 5 teeth suborbicular, apiculate, 2 mm. high; corolla ovoid-cylindric, ventricose below, "rose-red," 17 to 19 mm. long, 5 to 6 mm. in diameter below, everywhere glabrous, the 5 teeth somewhat spreading, triangular-ovate, acutish, 3.5 mm. long; stamens 10, equal, the linear-oblong glabrous filaments 3.8 mm. long, the densely muriculate anther sacs 5 to 5.5 mm. long, the tubules 2, connate, 4.8 to 5 mm. long, each opening by a longitudinal slit for more than half its length; style exserted about 4 mm.

Type in the U. S. National Herbarium, no. 1059981, collected in moist region on slopes of Volcán Irazú, Costa Rica, altitude 3050 meters, June 28, 1920, by Wilson Popenoe (no. 1017).

According to Mr. Popenoe, this species grows sometimes as an epiphyte and sometimes on the ground. Its nearest relative, *Macleania turrialbana* Donn. Smith, also of Costa Rica, has oval or elliptic-oblong leaves, acutish to broadly rounded at base, spreading or pendulous racemes, and tubules (despite the original description) somewhat longer than the anther sacs. In Hörold's synopsis[1] of the genus *M. turrialbana* is incorrectly placed in the group with anthers produced into a single tubule. In the type material they are produced into 2 connate tubules. *Macleania costaricensis* (Klotzsch) Hörold, of which I have seen no material, is apparently close to *M. irazuensis*, to judge from the abbreviated original description, but it is placed by Hörold, who had presumably examined material, in the 1-tubular group.

Macleania laurina Blake, sp. nov.

Scandent shrub; stem stout, obscurely puberulous, glabrate, very leafy; leaves variable; petioles stout, obscurely puberulous or glabrous, 3 to 11 mm. long; leaf blades ovate to oblong-elliptic, 5 to 11 cm. long, 2.5 to 3.5 cm. wide, acute to obtusish, at base rounded to rounded-cuneate, entire, not revolute, thick-coriaceous, sparsely short-hirsute with dark hairs which often leave little pits on falling, penninerved, the chief lateral veins about 3 pairs, impressed above, prominulous beneath, the secondaries few and obscure or obsolete; raceme axillary, subumbelliform, spreading-puberulous, its axis 2 cm. long, about 20-flowered; pedicels clavate, 1.5 to 2 cm. long, spreading-puberulous, articulate with calyx, bearing 2 or 3 deciduous bractlets near the base; calyx densely puberulous, the tube campanulate, subterete, 3 mm. high, the limb 5 mm. high, 8 mm. wide, the 5 lanceolate to narrowly subulate teeth 1 to 2 mm. high; corolla ovoid-cylindric, ventricose below, "rose-pink, waxy," 1.8 to 2.2 cm. long, 7 mm. in diameter below, densely griseous-puberulous outside, glabrous within, the 5 triangular-ovate erect acutish teeth 2.5 mm. long; stamens 10, equal, the linear-oblong filaments pilose-ciliate for the upper half of their length, 4 mm. long, the densely muriculate anther sacs 6 mm. long, the tubules 2, connate,

[1] Bot. Jahrb. Engler 42: 268. 1909.

dehiscing by slits for about half their length, 4 mm. long; style barely exserted; "berry round, dark purple, juicy, about 12 mm. thick."

Type in the U. S. National Herbarium, no. 1059985, collected among brush on hillsides near El Angel, Province El Carchi, Ecuador, altitude 3355 meters, June 5, 1921, by Wilson Popenoe (no. 1340).

Described by the collector as abundant in the vicinity of El Angel at elevations from 3050 to 3660 meters. It bears the Quichua names "chaqui-lulu" (signifying the ball of a baby's foot, given it from the appearance of the fruit) and "haulicón." The latter name is applied to several related species, while the former is distinctive of this plant. It is not cultivated.

Macleania laurina is allied to *M. loeserneriana* Hörold, from Mt. Pichincha, but in that species the axis of the raceme is 5 cm. long, the bractlets of the pedicels are borne near the middle, the corolla is apparently smaller, and the anthers with their tubules are 1.3 cm. long.

Macleania popenoei Blake, sp. nov.

Shrub 3 m. high, sometimes half-climbing; branches stout, olive-green, glabrous, subangulate, very leafy; petioles stout, fleshy like the base of the costa, glabrous, 7 to 10 mm. long; leaf blades oblong-elliptic to ovate, 7 to 10.5 cm. long, 3 to 4.8 cm. wide, acute to obtusish, at base cuneate to rounded, entire, thick-coriaceous slightly revolute, sparsely impressed-punctate and glabrous on both sides, feather-veined, the stronger lateral veins 2 or 3 pairs, impressed above, prominent beneath, the secondaries rather obscure on both sides; flower buds 7 mm. long, densely covered with imbricated ovate bracts with spreading-recurved acuminate ciliolate tips; flowers in axillary fascicles of about 6 to 10; pedicels deflexed, glabrous, about 8 mm. long, bearing 2 small ciliolate bractlets at or below the middle and a circle of small glands at apex, where articulate with the calyx; calyx campanulate, subterete, glabrous, 5 mm. long, the limb 5 mm. wide, the 5 acutish teeth lanceolate to deltoid, 0.5 to 1 mm. long; corolla "reddish," ovoid-urceolate or tubular-urceolate, 12 to 13 mm. long, fleshy, everywhere glabrous, the 5 teeth ovate, acutish, erectish, 1.5 mm. long; stamens 10, equal, the broad filaments free or connate, about 2.8 mm. long, densely ciliate above, the densely muriculate anther sacs 5 to 5.5 mm. long, the two coherent longitudinally dehiscent tubules 3 mm. long; style exserted about 5 mm.

Type in the U. S. National Herbarium, no. 1059984, collected in cool moist scrub in the Cordillera de Zamora, east of Loja, Ecuador, altitude 2440–2745 meters, April 8, 1921, by Wilson Popenoe (no. 1330).

This species is said to be abundant, and is known as "joyapa," a generic name applied to various species. It produces soft, sweet, juicy fruits about half an inch in diameter, but is not cultivated. It appears to be as near *M. pilgeriana* Hörold as any other species, but is distinguished from that plant by its broader leaves with the nerves impressed above, its somewhat shorter corolla, the ciliation of its filaments, and the different proportions of the anther sacs and the tubules.

Citharexylum subflavescens Blake, sp. nov.

Tree 8 m. high; branchlets elliptic in cross-section, flattened near the nodes, white-pithy, densely flavescent-tomentulose with branched hairs,

becoming griseous or sordid; leaves opposite; petioles slender, those of the main leaves 3 to 6 cm. long, pubescent like the branchlets, channeled beneath and often above; blades ovate or oblong-ovate, 12 to 17.5 cm. long, 4 to 8 cm. wide, acute, at base cuneate to rounded, entire, thick-pergamentaceous, somewhat sinuate and minutely revolute on margin, above in youth densely pubescent with spreading olivaceous-yellowish branched hairs, in age glabrescent except along costa and veins and then pale green, beneath very densely and persistently flavescent-pilose-tomentose with branched hairs, the costa and 13 to 16 pairs of lateral veins (united close to margin) impressed above, prominent beneath, the secondaries obscure or concealed; spikes solitary or paired in the upper axils, about 9 cm. long (including the 0.7 to 1.8 cm. long peduncle), 1.6 cm. thick, rather densely flowered, pubescent like the stem, apparently erect or spreading; flowers sessile; bracts triangular, 1 to 2.5 mm. long, tomentose-pubescent; calyx obovoid, 5 to 6 mm. long, densely pubescent like the stem, its teeth irregularly cohering in two or three groups, these triangular, obtuse or apiculate, about 1 mm. long; corolla "whitish," 8 mm. long (limb about 4 mm. wide), essentially glabrous outside, densely barbate-pilose within from level of insertion of stamens to middle of the 5 (rarely 6) lobes, these cuneate-flabellate, 2 to 2.5 mm. long, somewhat wavy-margined; perfect stamens 5 (rarely 6), inserted near middle of corolla tube, included, the subulate glabrous filaments 1.3 mm. long, equaling the linear-oblong obtuse anthers; ovary 4-celled, the ovules solitary, erect; style bifid; "fruit red, the size of a small cherry, in spikes up to 30 cm. long."

Type in the U. S. National Herbarium, no. 1067081, collected at Bogotá, Colombia, altitude 2640 meters, October 11, 1920, by Wilson Popenoe (no. 1143).

This species is cultivated in Bogotá as a street tree. It is distinguished by its combination of long-petioled comparatively large leaves, densely flavescent-tomentose beneath, and its truly spicate pentandrous flowers. Only a few species with all the stamens perfect have been described, and from all of these *C. subflavescens* is clearly distinct.

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PROCEEDINGS

OF THE

BIOLOGICAL SOCIETY OF WASHINGTON

THE FUNGOUS INSECT FAUNA OF A MESOPHYTIC WOODS IN NEW JERSEY.

BY HARRY B. WEISS.

During the course of a survey of the plants and insects of a moist woods, special attention was paid to the fungous insect fauna and the following notes summarize the findings.

The surveyed area consisted of about fifteen acres of moist woods located at Monmouth Junction, N. J., on the lower border of the Piedmont Plain and just above or on the southern edge of the deciduous zone of New Jersey. The flora of this area was typical of many of the numerous similar woods found in the Piedmont Plain. The ground was moist with many wet spots but seldom became swampy. Among the trees the red maple was the dominant species. This together with the oaks (*palustris*, *rubra*, *alba*) contributed over half the trees in the woods, the balance consisting of ironwood, sweet gum and beech with scattering clumps of gray birch in various stages of decay. The shrubs consisted of viburnums, spice bush and elder. In the more open spaces dense thickets of green briar prevailed.

The rich fungus flora consisted mainly of polypores thriving on the many trees and stumps in various stages of decay and numerous species of gill fungi supported by the moist forest floor. Among the fungi, most of the conspicuous forms belonged to the *Polyporaceae* and *Agaricaceae*. Much of the dead wood was occupied by such species as *Polyporus versicolor*, *Polyporus pargamenus*, *Daedalia quercina* and similar coriaceus forms. In the *Agaricaceae* those belonging to the genera *Pleurotus*, *Pluteus*, *Russula*, *Lactarius*, *Collybia* and *Clitocybe* were the most conspicuous. The following table summarizes the fungous insect findings by families.

FUNGOUS INSECTS IN THE WOODS.

Order	*Family*	*No. species*	*Family habits*
Collembola		2	saprophagous
Coleoptera	Silphidae	1	"
	Staphylinidae	10	predacious, saprophagous
	Histeridae	1	predacious
	Scaphidiidae	1	saprophagous
	Dascillidae	1	"
	Ostomidae	1	varied
	Nitidulidae	7	varied
	Erotylidae	3	saprophagous
	Cryptophagidae	1	"
	Colydiidae	1	"
	Endomychidae	1	"
	Tenebrionidae	3	"
	Melandryidae	2	"
	Anobiidae	2	"
	Cisidae	9	"
	Anthribidae	1	"
Thysanoptera		1	"
Diptera	Tipulidae	1	"
	Mycetophilidae	1	"
	Ortalidae	1	"
Acarina	Oribatidae	2	"
		53	

Of the 53 species collected, the Coleoptera supplied the major portion and in this order the *Staphylinidae* and *Cisidae* contributed more species than other single families. Had it been possible to breed out the fungous gnats inhabiting gill fungi, the Diptera would have been better represented.

It is of interest to compare the number of species associated with fungi with the numbers found in other situations in the woods and such comparison is found in the table below.

DISTRIBUTION OF THE INSECTS IN THE WOODS.

Situation, etc.	*No. species collected. (all orders)*	*Percent of total number*
Sifting	37	9.0
In dead stumps, under bark, etc.	44	11.0
Under stones	17	4.0
In dead trees	6	1.4
Taken flying or sweeping	210	50.0
Flower visitors	15	3.6
Galls and leaf miners	25	6.0
Fungous forms	53	13.0
Scales and aphids	8	2.0
	415	100.0

Fig. 1.—Ideal conditions for the support of fungous insects.

Fig. 2.—One of the many wet spots in the woods, with dead tree at right.

Fig. 3.—Fallen trees and dead wood were plentiful in the woods.

Fig. 4.—A dead birch bearing sporophores of *Polyporus betulinus*.

Fig. 5.—An early spring view of the woods.

All photographs were taken in the surveyed woods at Monmouth Junction, N. J.

Thus 50 per cent of the species were collected in flight or by sweeping the vegetation. This percentage is followed by 13 for the species associated with fungi. Insofar as the number of species is concerned only those found in dead stumps, under bark, etc., approached the fungous forms in importance.

The various types of food habits found in the woods are shown in the next table. Thus about 37 per cent of the species were phytophagous, about 35 per cent saprophagous and this percentage appears reasonable in view of the dead timber which was present and the moist conditions. The 146 saprophagous species consisted of most of those found while sifting, about half of those found in dead stumps, etc., 37 species taken by sweeping and the fungous species with the exception of the predacious forms. All of the fungus visitors were placed in the saprophagous class even though some of them are not really feeders on vegetable decay and do not inhabit fungi which are in visible stages of decay.

Types of Food Habits in the Woods.

	No. species all orders	*Per cent of total number*
Phytophagous	155	37
Saprophagous	146	35
Predacious	83	20
Parasitic	20	5
Pollenizers	11	3
	415	100

In the next table the percentages of species exhibiting the several types of food habits found in the woods are compared with those for the State of New Jersey as a whole, the latter figures being based on the recorded fauna of New Jersey. It should be stated that the 5 per cent for parasitic species in the woods is probably low and could have been increased by more diligent collecting of the small forms in the Hymenoptera.

TYPES OF FOOD HABITS OF SPECIES FOUND IN SURVEYED AREA AND IN STATE OF NEW JERSEY.

Food habits	*Surveyed woods per cent of total species collected*	*State of New Jersey per cent of total number species listed from N. J.*
Phytophagous	37	49
Saprophagous	35	19
Predacious	20	16
Parasitic	5	12
Pollenizers	3	2
Miscellaneous	0	2
	100	100

In the surveyed woods, the 100 per cent equals 415 species and in the State of New Jersey, it equals 10,500 species which is about the number listed as occurring in that State.

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PROCEEDINGS

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ON SIMONELLA, A GENUS OF SALTICID SPIDERS NEW TO NORTH AMERICA.

BY EDWARD A. CHAPIN.

Some time ago, after a collecting trip to southern Florida, Dr. Alexander Wetmore presented me with a few spiders and insects. Among these was a specimen of Salticidae, collected in connection with an ant (*Pseudomyrma* sp.) and somewhat resembling it. Study showed the spider to belong to the genus *Simonella* Peckh., a genus heretofore known only from Central and South America.

Simonella petrunkevitchi, n. sp.
(Figs. 1 and 2.)

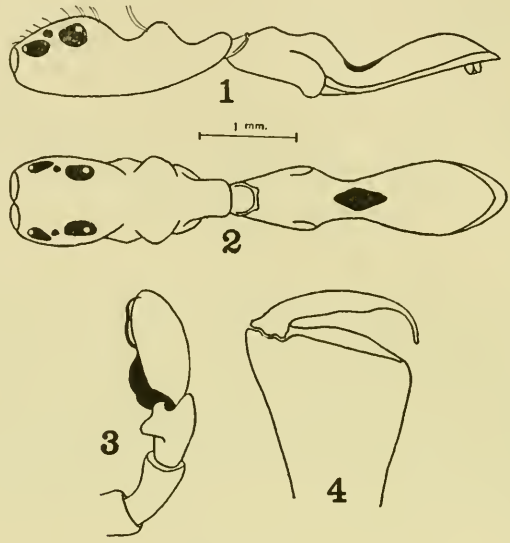
Color golden brown, eyes on black spots, abdomen with a short, dark lozenge-shaped spot dorsally on the constriction. Legs pale. Anterior median eyes very large, with a few white hairs about them. Palpus (fig. 3) moderately large, the penultimate segment with a large lateral plate-like tooth, the distal extremity of which ends in a short, stout, heavily chitinized tooth which is slightly recurved, the proximal portion is more prominent but is less heavily chitinized. Chela (fig. 4) large, vertical, without teeth on margin of the fang groove, and without the tooth at the base of the promargin as in *S. bicolor* Peckh., fang long, becoming suddenly thinner and more curved at its apical third, smooth, without tooth. Legs rather thin, the femora of the leg I slightly enlarged, tibia I with stout spines 3–3, metatarsus I with stout spines 2–2, leg formula[1] apparently 4 3 1 2, first and third legs almost equal. Sternum elongate, narrow, pentagonal, much as in *S. bicolor* Peckh. Chitinous portion of the venter short, narrow, triangular. Spinnerets apparently ventral, a short distance before the apex, though this condition may be due to shrinkage from drying. Dorsal surface with a few setigerous punctures, otherwise smooth and glabrous. Length of male: 5 mm.

Habitat: Sebastian, Florida, February 11, 1919, running on foliage in company with *Pseudomyrma* sp., A. Wetmore, collector.

[1]Specimen lacks both of the second pair of legs.

Type: An adult male in the collection of the author.

Dedicated to my former instructor, Dr. Alexander Petrunkevitch, in appreciation of his contributions to the science of arachnology.



Simonella myrmeciaeformis (Tacz.).

Janus myrmeciaeformis Taczanowski, Horae Soc. Ent. Rossicae, Vol. 8, p. 125, pl. 4, fig. 9 (1871).

Simonella myrmeciaeformis Peckham, Occas. Papers Nat. Hist. Soc. Wisconsin, Vol. 2, no. 1, p. 81, pl. 7, fig. 4 (1892).

It seems evident that the above cited descriptions do not refer to the same species. Taczanowski's material came from French Guiana and was described as being ochre-yellow with four black spots on the head and with two pale annulations on the abdomen. Peckham in his 1892 paper, redescribed the species as with a black head, a white band around the constriction, and with the posterior segment of the abdomen dark brown. The original locality (French Guiana) is cited and an additional locality, Chapoda (Chapada), Brazil (Collection (H. H.) Smith). It is probable that the Brazilian specimen or specimens represent the species described by Peckham and that it is an unnamed species. For numerous reasons I do not care to attach a name to the description.

Simonella americana Peckh.

Simonella americana Peckham, Proc. Nat. Hist. Soc. Wisconsin, p. 23, Pl. 1, fig. 1 (1885); Peckham, Occas. Papers Nat. Hist. Soc. Wisconsin, Vol. 2, no. 1, p. 80, Pl. 7, fig. 3 (1892).

In the 1892 paper, the word description and the figure appear not to be in accord. According to the description the palpus should be black and the legs, except for the distal end of the fourth and the inside of the patella, tibia and metatarsus of the first, should be pale. In the figure, the palpus is pale, while the femora of the third and fourth pairs of legs are dark.

I have attempted to bring out the salient characteristics of the species of the genus in the appended key. A key based on word descriptions or even figures is usually very unsatisfactory but often times proves to be of some value. Owing to the lack of knowledge of the female in some cases the key is based on general characters or male characters, but in no case is a purely female character used.

1. Caput with four or six black spots on a golden brown background.....2.
   Caput entirely black.....5.
2. Distance between the outside margins of eyes of second row less than that between outside margins of eyes of first row; abdomen grayish; habitat French Guiana.....*lucasii* (Tacz.)
   Second row of eyes as wide or wider than first row.....3.
3. Caput with four black spots; abdomen with two pale annulations, one at the middle of the anterior part, the other at the constriction; habitat French Guiana. .....*myrmeciaeformis* (Tacz.)
   Abdomen without pale annulations.....4.
4. Caput with six black spots; abdomen with a lozenge-shaped black spot at the constriction; chela without tooth at base of promargin; habitat Florida, U. S. A.....*petrunkevitchi* Chpn.
   Caput with four black spots; abdomen with pedicel black; chela with tooth at the base of promargin;[1] habitat Venezuela.....*bicolor* Peckh.
5. Process of tibia of male palpus almost quadrate, directed toward the hyposynangeal surface, habitat Brazil.....*myrmeciaeformis* Peckh. nec Tacz.
   Process of tibia of male palpus acutely triangular, directed anteriorly....6.
6. Tibia of male palpus less than half as long as tarsus.....*decipiens* O. P.-C.
   Tibia of male palpus as long as tarsus.....*americanus* Peckh.

[1] According to F. O. Pickard-Cambridge in Biol. Centr.-Amer., Arach., Vol. 2, p. 169, 171, Pl. 12, figs. 1-2. Specimen from Panama, Bugaba.

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PROCEEDINGS

OF THE

BIOLOGICAL SOCIETY OF WASHINGTON

NEW SPECIES OF CALLIMERUS FROM MINDANAO, PHILIPPINE ISLANDS.

BY EDWARD A. CHAPIN.

Owing to the premature publication of the names "*Callimerus persimilis* Chapin" and "*Callimerus bakeri* Chapin" in an exchange list of coleoptera, the present descriptions are offered to validate them.

Callimerus persimilis, n. sp.

General appearance, form and size as in *C. albescens* Chpn., from which the present species differs markedly in the genital characters. Black, almost entirely clothed above with white scales; legs, antennae, mouth-parts and sometimes abdomen pale. Head, except for the labrum and underside, very densely clothed with scales, finely alutaceous above, smooth beneath, antennal club very lax, terminal segment oval. Thorax almost cylindrical; apical and basal transverse impressions broad and shallow; lateral dilations feeble, the width at the extreme base being almost equal to the width across them; on the disc there is a shallow depressed area followed by a smooth median line which reaches to the basal marginal bead, surface, except on the smooth line, with coarse, scattered punctures. Elytra with the punctures of the basal half arranged in rows, these rows fail entirely beyond apical fourth, surface as it appears at the nude spots finely alutaceous, almost entirely covered with white scales, the scales being absent at almost the same places as in *C. albescens*. Under-parts finely wrinkled, laterally with white scales. In one specimen, a female, the abdomen is pale. Legs long and slender, claws with small basal lobe, almost simple. Hind tibiae without subapical notch.

Male: Fifth ventral abdominal segment with a broad and shallow emargination, sixth ventral similar to fifth, terminal dorsal evenly rounded, lobes of penis sheath with external hook-like processes on external side.

Female: All ventral segments with simple, unmodified margins.

Length: 6.5–7.5 mm.

Type: A male from Surigao, Mindanao (C. F. Baker No. 16293). Paratypes: one male and two females from Surigao (C. F. Baker No. 14725), one female from Kolambugan, Mindanao (C. F. Baker).

Type in the collection of the author, paratypes in collections of Professor Baker and the author.

Callimerus bakeri, n. sp.

Form, size and superficial appearance much as in *C. luzonicus* Chpn. Frontal region including clypeus rather densely punctured, occiput and vertex smooth and shining. Eyes margined in front with white scales, which are continued in a band across the punctured portion of the front. Thorax urn-shaped, the basal transverse impression bordered behind by a sharply raised ridge, anterior impression broad and shallow, with numerous very fine transverse striae, especially toward the middle. Lateral dilations moderate, lateral foveae broad, circular and shallow. Punctures fine and sparse. Scutellum truncate behind. Elytra long, lateral margins almost parallel, apices obliquely truncate, the outer angle of the truncature with a rather conspicuous mucro. Punctures rather fine, arranged in longitudinal rows, the rows becoming closer together as the lateral margin is approached but without the conspicuous crowding of rows 4–6 as in *C. lateralis* Chpn. Scales yellowish white, evenly distributed over the elytral surface. The flanks of the elytra are slightly darker than the disc. Under parts heavily scaled along the sides, abdominal sternites moderately closely punctured.

Male: Terminal dorsal with broad median triangular lobe which is subacute at apex. Laterally, the segment is prolonged into a thin, flat ramus on each side, which ends in an upwardly directed thorn-like triangular process. The lobes of the penis sheath end in short, outwardly-directed hooks. Fifth and sixth ventrals transverse, nearly straight.

Female: Fifth ventral with a very broad and shallow emargination, the width of the emargination about equal to one-half the width of the sclerite.

Length: 6.5 mm (♂)—8 mm. (♀).

Type: A male from Butuan, Mindanao (C. F. Baker 17541), paratypes as follows: a female from Surigao, Mindanao (C. F. Baker 14726), a female from Iligan, Mindanao (C. F. Baker 12736) and 4 males and 3 females from Surigao, Mindanao (C. F. Baker), 3 females from Butuan, Mindanao.

Type in the collection of the author, paratypes in collections of Professor Baker and the author.

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PROCEEDINGS

OF THE

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A NEW HYRAX FROM EAST AFRICA.[1]

BY N. HOLLISTER.

Among several subspecies of *Heterohyrax brucei* contained in the United States National Museum is an undescribed form from southwestern Kenya Colony. It was collected by the Paul J. Rainey African Expedition in 1911.

Heterohyrax brucei albipes, subsp. nov.

Type from Telek River, Loita Plains, Kenya Colony. No. 181,551 U. S. National Museum, skin and skull of adult ♀ (stage VIII); collected May 17, 1911, by Edmund Heller (Rainey Expedition).

Diagnosis.—Like *Heterohyrax brucei hindei* (Wroughton) but fresh pelage lighter, more grayish; underparts white, the hairs along middle clear white to roots; dorsal spot pale cinnamon or whitish; arms and legs grayer; fingers white; white of inner side of legs spreading along inner half of upper surface of feet and toes; the outer half of feet gray like outer side of legs. Skull and teeth essentially as in *hindei*.

Measurements of type.—Head and body, 470 mm.; hind foot, 63; ear, 35. Skull: Greatest length, 84.3; condylobasal length, 80.3; basal length, 75.8; zygomatic breadth, 46.4; nasals 19.5 × 18.2; diastema, 12.7; upper molar-premolar row, 31.9; mandible, 67.8; lower molar-premolar row, 31.7.

Specimens examined.—Twelve from the type locality.

[1] Published by permission of the Secretary of the Smithsonian Institution.

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PROCEEDINGS

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AN INTERESTING ADDITION TO THE FLORIDIAN DECAPOD CRUSTACEAN FAUNA.

BY PEARL LEE BOONE.

The capture of two specimens at Key West in 1914 by Mr. Louis L. Mowbray and more recent investigations by the Biological Laboratory of the Miami Aquarium Association have added to our knowledge of the wonderfully rich crustacean fauna of Florida a third species of edible crawfish or spiny lobster, the magnificent *Panulirus laevicauda* (Latreille), hitherto known only from the type locality, "the shores of Brazil," French Guiana, one or two stations along the east coast of Central America, and more rarely from the Isle of Pines and southern Cuba.

According to Moreira, this species is more abundant in Brazil than either *Panulirus argus*, the common edible crawfish of Florida, or *P. guttatus*, the "guinea crawfish," and is commonly sold in the markets of that country. These *Panulirus* are industrially the most important crustaceans of tropical American waters, hence it is especially gratifying to learn that *Panulirus laevicauda* which is economically predominant in Brazil, is also native to Florida and consequently available for artificial propagation should it become desirable to supplement the natural supply of crawfish.

The layman can readily distinguish *P. laevicauda* from its American allies by: 1, its distinctive exquisitely rich moss green and maroon coloration; 2, the short proximal joint of the antennules; 3, the shape of the epistome, particularly the anterior margin of the latter; 4, the fact that its abdominal segments are smooth dorsally, not having a transverse groove.

The following description of the species is given in order to

record certain data not included in the earlier literature where this species was several times confused with other species, and with the hope that other workers may become interested in the species and further the knowledge of its North American distribution.

Panulirus laevicauda Latreille.

Carapace about as long as the abdominal segments including the anterior third of the caudal fan; covered with stout spines, the more prominent of which are arranged in ten more or less regular longitudinal rows; spaces between the major spines are almost completely covered with lesser spines which are broader basally, sharp-tipped and ringed with a circle of close-set plumose setae; all the spines are directed upward and forward. The side plates of the carapace are more freely articulate than in *P. argus* or *P. guttatus*.

Orbital spines compressed laterally, but less so than those of *Panulirus argus* or *P. guttatus*, deeper dorso-ventrally, and slightly more elevated than in *argus or guttatus*. Eyes prominent, shining black. Anterior to the frontal horns there are four long equal and equally spaced green spines, between the latter near the base of the second pair are several weak spines clothed with setae. There is a convex ridge extending from the base of the orbital spines to the extreme frontal margin, this is much more prominent than in *argus* or *guttatus*.

The antennae have the basal article short on the outer dorsal surface, produced and tapering to an acute point on the inner dorsal surface, also on the inner ventral surface; there is a very strong spine on the inner dorsal angle of this joint, another about half as strong on the outer dorsal angle, below the latter are two very minute spines. The inner posterior dorsal part of the basal joint is produced into a convex-concave triarticulate scale, that slides over forming the animal's sound-producing organ. The second joint of the antennae is about one and one half times as long as the first and less oblique distally, but with a strong spine on the inner distal margin preceded by two less strong; there is another strong spine in the median dorsal area of the margin with two lesser spines just preceding it, and another weaker spine on the outer lateral margin; there are several small spines on the outer lateral and ventral surfaces; the third article is almost as long as the second, almost evenly produced distally, with a series of three strong subequal spines on the inner lateroventral margin, another strong spine on the median dorsal area of the margin, another similar spine on the outer lateral margin, there are seven or eight lesser spines scattered over the surface of third article; the flagellum is about twice as long as the body and consists of slender uniformly tapering rings; the flagellum is set with somewhat regularly placed rings of small spines at intervals and fringed along the proximal part on the inner ventral margin with fine close-set setae.

The antennules have the basal joint extending a trifle beyond the tip of the second peduncular joint of the antennae, the second article is two-thirds

as long as the first and extends to the distal end of the peduncle of the antennae; the third article is a trifle shorter and slenderer than the second; the inner flagellum is longer and stouter than the outer; and is about a third as long as the flagellum of the antennae; the outer flagellum of the antennules is a little more than half as long as the inner.

The epistome is shield-shaped, produced to a decided spine at the apex between the base of the antennules, there is another spine on each side at the outer margin of the antennules; the space between these spines is deeply roundly excavate, the anterolateral margin of the epistome slopes abruptly diagonally from these spines to the outer lateral angle of the base of the antennae.

The exopodites of the first pair of maxillipeds are normal with brushes. The second maxillipeds have the exopodite well developed, multiarticulate, with brushes. The third maxillipeds have the exopodites very poorly developed.

The sternal plastron is decidedly shorter and broader than those of *P. argus* and *P. guttatus*, anteriorly it terminates in a blunt rounded nodule; the sterna corresponding to the first pair of appendages is roughly triangular, and bears a deep groove in the median line; the sterna corresponding to the second, third, and fourth pairs of limbs are similar in shape but graduatingly increase in width posteriorly, the fourth being widest. The sutures between all the sterna are distinct, those of the second to fourth sterna inclusive extend inward slightly more than half the distance to the median line, that of the fifth sterna extends farther in, almost to the median line, its apex is distinctly punctate.

The first pair of legs are stout, the second are longer and slenderer, the third are the longest, the fourth are about the same as the second, the fifth are the shortest and weakest, all have the dactyl stout, acute and furnished with bristles on the first, second, and third legs, and with slender spines interspersed with bristles on the fourth and fifth legs.

The first abdominal somite is short, decidedly grooved; the second and third somites are the longest, subequal; the fourth somite is about four-fifths as long as the third; the fifth somite is about four-fifths as long as the fourth; the posterior of each somite is fringed with short close-set setae. The lateral angles of the somites are produced into acute teeth directed posteriorly; that of the first segment is most acute, those of the second and third are broader, of the fourth and fifth more curved, of the sixth broadly curved, less acute; the post lateral margins of all the somites are finely serrate just above the apical tooth, while in *P. argus* there is a single spine, and also the same in *P. guttatus* but slightly differently placed. Pleopoda are wanting on the first abdominal segment, those of the second segment consist of a single broad, ovate, membraneous lamina; the pleopoda of the third segment are about one and one-half times as long as those of the second and narrower; those of the fourth segment are slightly longer than those of the third, while those of the fifth segment are smaller and more acuminate.

Color.—The carapace is maroon, the spines of the carapace are green with a purplish maroon base except those on the lateral margin which are set in a light creamy buff base. Orbital spines purple mottled with light

creamy buff, the convex ridge below the orbital spines is yellow anteriorly shading into deep orange posteriorly.

The antennal peduncle is maroon mottled sparsely with creamy buff. The spines have the basal half deeper maroon than elsewhere, ringed medially with cream, the distal half green. The flagellum is lighter purple streaked ventrally and dorsally with a median longitudinal darker line.

The antennules are maroon with a creamy buff mottling at the distal end of each peduncular joint.

The legs have the first four joints maroon with a slight greenish cast, longitudinally striated with narrow creamy lines slightly tinted with ochre, the fifth and sixth joints are a rich moss green longitudinally striated with narrow creamy lines.

The first abdominal somite has the anterior part green mottled with whitish dots, the posterior part maroon, finely punctate, the second to fifth somites inclusive are maroon in the median area, shading into deeper maroon posteriorly, the lateral parts are green, the entire surface is finely punctate; a row of minute white dots parallel the posterior of each somite. The sides of the somites are maroon-greenish; there is an enlarged white spot on the median lateral region at the terminal of the epimeral groove, below these are many spots of creamy buff including the tips of the segments. The telson has the basal part to the anterior third of the caudal fan green spotted with creamy buff; the posterior third of the fan is a similar green, the interspace being lighter green, the caudal fan is margined with bright yellow. All the pleopoda are green dotted with a few creamy spots and bordered with a bright yellow margin.

Seven specimens and three cast shells are in the collections of the Biological Laboratory of the Miami Aquarium Association and were captured in the vicinity of Biscayne Bay, Florida. In size the *Panulirus laevicauda* (Latreille) taken in Florida waters average about the same as the *Panulirus argus*.

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PROCEEDINGS

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SEVEN NEW SPECIES OF THE SYRPHID GENUS SPHEGINA MEIGEN (DIPTERA).

BY J. R. MALLOCH.

There are at the present time seven species of this genus recorded from the United States. In this paper there are included descriptions of seven new species the types of all of which are deposited in the United States National Museum.

Sphegina flavomaculata, sp. n.

Male.—Shining black, with faint grayish pruinescence. Antennae brownish yellow. Thorax indistinctly trivittate, the median vitta divided anteriorly. Abdomen with a large elongate yellow mark in center of first (second) tergite, and the second and third tergites yellow except posteriorly. Legs colored as in *armatipes*.

Arista thickened on basal two thirds, very little longer than antenna, with very short pubescence. First tergite broad, narrowed basally, not longer than the next two combined. Fifth sternite with very short pale hairs which are almost uniformly distributed on the entire surface; hypopygium with short hairs. Hind femur not as thick as first tergite; spur of hind tibia curved, acute; basal segment of hind tarsus shorter and stouter than in next species.

Length, 5 mm.

Type.—Great Falls, Va., April 20, 1916 (W. L. McAtee).

Sphegina armatipes, sp. n.

Male.—Black, shining, with faint gray pruinescence. Facial prominence slightly yellowish, antennae brown; palpi yellow, infuscated at apices. Base of second tergite broadly yellow, venter largely yellowish. Apical two segments of fore and mid tarsi and all of hind pairs fuscous; hind femora except base, and apices and bases of hind tibiae blackened. Wings slightly infuscated apically.

Frons about twice as long as wide, with very short hairs; arista gradually tapered from base, densely pubescent, longer than antenna. Scutellum rounded, with two long hairs. First tergite as long as the next two combined, widened from base to apex; fifth sternite with a large patch in center pos-

teriorly nearly bare, laterad and basad of this with moderately long pale hairs; hypopygium with rather dense pale hairs. Hind femur as thick as first tergite; hind tibia with a beaklike apical process as in last species; hind trochanters with some minute black setulae below. Other cross-vein about twice as long as its distance from bend of fourth vein.

Female.—Differs from the male in lacking the yellow mark on second tergite, and in having two poorly defined rufous marks at base of third.

The first tergite is broader than in male, and not so long as the next two combined, the fourth is slightly flared at apex owing to the presence of a shallow transverse preapical depression, and is conspicuously hairy as is also the fifth sternite. The hind trochanters in allotype are as in type, but in the paratype there are no black setulae present. The hind tibiae lack the apical beaklike process in both specimens.

Length, 8–9 mm.

Type.—Bairs Ranch, Redwood Creek, Humboldt Co., Calif., June 11, 1908 (H. S. Barber). Allotype, female, Walnut Creek, Contra Costa Co., Calif., May 13. Paratypes, one female, Los Angeles Co., Calif. (coll. Coquillett), one male, Dewatto, Wash., June 7, 1906 (J. M. Aldrich), one male, Moscow Mt., Ida., June 4, 1910 (J. M. Aldrich), one male, Waha, Ida., June 18, 1909 (J. M. Aldrich).

Sphegina armatipes, var. **rufa,** var. n.

Male.—Rufous, frons fuscous, abdomen suffused with castaneous, bases and apices of hind tibiae and all of hind tarsi fuscous.

Structurally similar to the type form, differing as follows: Arista more slender and less densely pubescent, hind femora not so thick, the process at apex of hind tibia rounded at tip and compressed from each side, and the hind trochanters without black setulae.

Length, 8 mm.

Type.—Fieldbrook, Humboldt Co., Calif., May 29, 1903 (H. S. Barber).

Sphegina monticola, sp. n.

Female.—Fulvous, shining. Frons and upper half of face fuscous. Apices of tergites 1 to 3 dark brown. Apical half of hind femur black, basal segment of hind tarsus and apical two segments of all tarsi brown.

Frons about one fourth of the head width, very short haired. The curved linear thoracic depression complete. First tergite slender basally, not as long as next two together, third flared at apex, fourth with a deep notch in center of posterior margin. Hind legs as in *campanulata* Robertson.

Length, 7 mm.

Type.—Mt. Washington, N. H.

Sphegina occidentalis, sp. n.

Male and Female.—Head black, antennae brown, face yellowish in middle below. Thorax black, humeri and postalar callosity reddish. Abdomen in male black, with the base of second tergite broadly yellow, in female rufous. Legs yellow, hind femora black except bases, basal segment of hind tarsi brown, the apical two segments of all tarsi hardly darkened.

Frons of male about three times as long as wide, in female about twice as long as wide, very short haired; arista pubescent, thickened on basal fourth. Scutellum short and wide, over twice as wide at middle as its median length, apex subtransverse, the two long hairs very widely separated. Abdomen constricted near base of first tergite, the latter not as long as the next two combined, fourth (fifth) tergite in female deeply notched in center of hind margin; fifth sternite of male with the left hind angle produced into a rounded lobe which is gray pruinescent apically, the hairs setulose. Hind femora stout, hind tibia not produced at apex ventrally, basal segment of hind tarsus slightly thicker than apex of tibia. Outer cross-vein as long as its distance from bend of fourth vein.

Length, 5.5–6.5 mm.

Type and allotype.—Dewatto, Wash., June 7, 1906. Paratypes, one male, Longmire Springs, Mt. Rainier, Wash., August 2, 1905, one female, Washington State. The first three taken by Dr. J. M. Aldrich, and the last one from the Williston collection identified and recorded by Williston as *rufiventris* Loew. I have not seen the latter from the west.

Sphegina biannulata, sp. n.

Female.—A black and yellow species closely resembling *flavimana*, the humeri, sides of mesonotum and scutellum, bases of second and third tergites and all of fourth, and all of fore and mid tarsi yellow; hind femur with two black bands, one just beyond middle and the other at apex.

The curved linear thoracic depression is practically absent, and in general this species is similar to *rufiventris*.

Length, 5.5 mm.

Type.—Virginia near Plummers Island, June 2, 1916, on flowers of *Aruncus aruncus* (W. L. McAtee).

Sphegina flavimana, sp. n.

Male.—Similar to *keeniana* Williston in color, but the humeral angles of thorax are pale yellow, and the fore and mid tarsi are pale yellow, with the apical two segments rarely brownish.

Structurally similar to that species, the hind tibia slightly scoop-like at apex ventrally, and the abdomen the same in general form, but the fifth sternite lacks the short stubby spinules that cover a large part of the disc in that species.

Female.—Agrees in color with the male.

Length, 5.5 mm.

Type.—Male, Maryland near Plummers Island, May 28, 1916 (H. L. Viereck). Allotype, Lafayette, Ind., July 30 (J. M. Aldrich). Paratypes, 3 males, Maryland near Plummers Island, May 28–29, 1916 (H. L. Viereck), two males, Lafayette, Ind., May 11, 1918, and June 29, 1916 (J. M. Aldrich); 1 female, Glen House, N. H., named *lobata* Loew by Williston; one female, Ithaca, N. Y., June (R. C. Shannon), and 1 male Tallulah Falls, Ga., June, 1909 (J. C. Bradley).

Sphegina californica, sp. n.

Male.—Similar in color to *infuscata* and *rufiventris*, the thorax black and the abdomen rufous, suffused with fuscous. Legs yellow, hind femora rufous, apical two segments of all tarsi and basal segment of hind pair fuscous.

Similar to *rufiventris* in structure, the arista long and slender, with the pubescence indistinct. Fifth sternite without spinules, the fine hairs very short. Hind legs as in *rufiventris*.

Length, 8.5 mm.

Type and paratype.—Walnut Creek, Calif., March 14 (W. M. Davidson).

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PROCEEDINGS

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THE NORTH AMERICAN SPIDERS OF THE FAMILY GNAPHOSIDAE.

BY RALPH V. CHAMBERLIN.

This paper gives a list of the known genera and species of Gnaphosidae (Drassidae) occurring in America north of Mexico with the synonymy as worked out in the preparation of a monograph of the family. Since this monograph is not likely to be published for some time, brief diagnoses of the considerable number of new species and genera recognized are included in order that the names may be used in the labeling of collections examined from time to time.

The generic classification here used is based primarily upon the morphology of the copulatory organs, particularly of the male, the detailed presentation of which must be deferred. The artificial key given below will be found convenient, pending publication of fuller accounts, in separating the genera represented by the species here considered. *Drassinella* Banks, heretofore referred to this family, is omitted because examination of its type species, *D. modesta*, has shown it to be a synonym of the genus *Heterochemmis* Cambridge, which belongs in the family Clubionidae. The genus *Teminius* is also rejected as a synonym of the clubionid genus *Syrisca* Simon. It was originally based upon two species, *T. insularis* Keys., from Hayti, and *T. continentalis* Keys., from Utah. The first of these, the genotype, conforms to *Syrisca*. The second is a true gnaphosid synonymous with *Orodrassus coloradensis* (Emerton). *Teminius nigriceps* Banks is also a true gnaphosid, synonymous with *Haplodrassus signifer* (C. Koch).

KEY TO THE GENERA OF NORTH AMERICAN GNAPHOSIDAE.

a. Lower margin of the furrow of chelicera keeled or lobed.
  b. Lower margin of furrow with three contiguous, chitinous lobes. *Laronia* Simon.
  bb. Lower margin of furrow with a single keel.
    c. Posterior row of eyes much longer than the anterior, strongly recurved, with the median eyes usually obviously nearer to each other than to the laterals. *Gnaphosa* Latreille.
    cc. Posterior row of eyes but little longer than the anterior, the eyes equidistant or the medians farther from each other than from the laterals. *Callilepis* Westring.
aa. Lower margin of furrow of chelicera unarmed or with from one to three ordinary teeth.
  b. Posterior row of eyes very strongly procurved, semicircular or nearly so.
    c. Lower margin of furrow of chelicera unarmed; bulb of palpus of male simple, with no true apophysis. *Megamyrmecion* Reuss.
    cc. Lower margin of furrow of chelicera with one tooth; bulb of palpus of male with a stout median apophysis **Scopodes**, gen. nov.
  bb. Posterior row of eyes not thus strongly procurved.
    c. Tibia IV with two, or less commonly with three or five, median dorsal spines, III with one or two.
      d. Lower margin of furrow of chelicera with two or three teeth.
        e. Eye rows close together, the laterals on each side separated by a distance decidedly less than their diameter, usually only equalling or less than their radius; posterior median eyes well separated, being only a little farther from the laterals than from each other.
          f. Lower margin of furrow of chelicera with three teeth, the upper with five. **Sosticus**, gen. nov.
          ff. Lower margin of furrow of chelicera with two teeth, the upper with three. **Rachodrassus**, gen. nov.
        ee. Eye rows widely separated, the laterals on each side separated by a distance about equalling or else exceeding their diameter; posterior median eyes much nearer to each other than to the laterals. (Tibia of palpus of male much longer than the tarsus; bulb with a single small apophysis ectad of base of embolus) *Drassodes* Westring.
      dd. Lower margin of furrow of chelicera with a single tooth. **Geodrassus**, gen. nov.
    cc. Tibia IV with a single median dorsal spine or with none.

d. Upper margin of furrow of chelicera unarmed, or with a keel, or with three serrations or teeth, rarely more (*Nodocion* only), the lower margin unarmed or with but a single tooth or nodule; bulb of male palpus with no apophyses, at most with one or several small teeth near base of embolus.

e. Posterior row of eyes more or less recurved.

f. Tibia III with a median dorsal spine; carapace without distinct median furrow.....*Sergiolus* Simon.

ff. Tibia III with no median dorsal spine; carapace with a distinct median furrow.

Poecilochroa Westring.

ee. Posterior row of eyes more or less procurved, or sometimes straight.

f. Lower margin of furrow of chelicera with one tooth or nodule; anterior median eyes usually as large as or larger than the laterals.

g. Clypeus twice as high, or more, as the diameter of an anterior eye; posterior median eyes much farther from each other than from the laterals; body with two black longitudinal stripes over both carapace and abdomen.

Cesonia Simon.

gg. Clypeus obviously lower; posterior median eyes not at all or but little farther from each other than from the laterals; body with no such black stripes above.

h. Eyes of posterior row typically nearly equidistant, the medians always well separated from each other and smaller than or at most as large as the laterals.

Herpyllus Hentz.

hh. Posterior median eyes close together and obviously larger than the laterals.

Litopyllus, gen. nov.

ff. Lower margin of furrow of chelicera smooth, wholly unarmed; anterior median eyes usually obviously smaller than the laterals.

Nodocion, gen. nov.

dd. Upper margin of furrow of chelicera with from three to six distinct teeth, the lower margin with two or three, or rarely with only one; bulb of male palpus with one or more apophyses.

e. Upper margin of furrow of chelicera with three teeth, the lower with two, all well developed.

f. Posterior median eyes large and oblique, typically close together but well removed from the laterals; epigynum in female with a prominent

chitinous ridge on each side, this with anterior end free and often cornuate; (tibia of male palpus with an apophysis at distal end that is long and laminate, and unbranched).

Haplodrassus, gen. nov.

ff. Posterior median eyes circular, their diameter or more apart; epigynum with no such anteriorly freely ending ridges or rims.

Hind spinnerets not longer than the anterior, the second joint very short or obscure; (tibia of male palpus with apophysis on ectal side, this short and bicornuate).

Orodrassus, gen. nov.

ee. Upper margin of furrow of chelicera with from four to six teeth, the lower margin with two or three small teeth or nodules, or rarely the upper margin with only three weak teeth and the lower with but one.

f. Posterior row of eyes straight or but little procurved with the eyes typically nearly equidistant, the medians small or at most but little larger than the laterals; bulb of male palpus with no median ventral and no ectal apophysis, but with one or two distal chitinous ridges or apophyses.....*Zelotes* Gistl.

ff. Posterior row of eyes procurved, the medians close together or contiguous, larger than the laterals, usually much so, oblique; bulb of male palpus with a conspicuous median ventral apophysis and with an ectal apophysis as well as a distal one.....**Drassyllus**, gen. nov.

Herpyllus Hentz.

Amer. Jour. Sci. and Arts, 1832, 21, p. 102; Spiders U. S., 1875, p. 90. *Scotophaeus* Simon, Hist. Nat. Araign., I, 1893, p. 371.

Genotype.—H. vasifer (Walckenaer).

Simon in his key to genera (Hist. Nat., I, 368) gives as a distinguishing feature of *Herpyllus* that the posterior row of eyes is strongly recurved. However, this is not true of the genotype, in which this row is essentially straight, or of any of the American species congeneric with it. The posterior row is at most moderately procurved. On the contrary, these species conform fully to *Scotophaeus* as defined by the author mentioned (op. cit., p. 371) and as represented by the European species referred to it, not only in eye characters but in other structural features as well. Hence, *Scotophaeus* is placed as a synonym of *Herpyllus*.

Herpyllus vasifer (Walckenaer).

Drassus vasifer Walckenaer, Tabl. Aran., 1805, p. 46; Ins. Apt., 1837, I, p. 620; Blackwall, Ann. Mag. N. H., 1871, ser. 4, 8, p. 434.

Herpyllus ecclesiasticus Hentz, Amer. Jour. Sci. and Arts, 1832, 21, p. 102; Spiders U. S., 1875, p. 90, pl. II, f. 2.

Prosthesima bimaculata Keyserling, Verh. zool.-bot. Ges. Wien, 1887, p. 433, f. 9.

Prosthesima ecclesiastica Emerton, Trans. Conn. Acad., 1889, 8, p. 173, pl. 3, f. 7; Common Spiders, 1902, p. 5, f. 17–18.

Herpyllus vasifer Simon, Hist. Nat. Araign., I, 1893, p. 373; Comstock, Spider Book 1912, p. 318, f. 308.

Distribution.—Canada and the entire U. S. westward as far as Colorado.

Specimens recorded under this name from the Pacific Coast are probably referable to the following species, *H. propinquus* (Keyserling).

Herpyllus propinquus (Keyserling).

Prosthesima propinqua Keyserling, Verh. zool.-bot. Ges. Wien, 1887, p. 430, f. 7.

Herpyllus californicus Banks, Jour. N. Y. Ent. Soc., 1904, p. 110.

Holotype.—M. C. Z. 675 (♀).

Distribution.—California: Santa Barbara (type loc.), Claremont, Lakeside, Gayton, etc.; Oregon; Utah.

Keyserling's original description covered two species, a specimen from Cambridge belonging to *H. vasifer* (Walck.) and one from Santa Barbara, indicated in the M. C. Z. collection as type, representing the present species.

Herpyllus scholasticus, sp. nov.

Male.—Cephalothorax, legs, and scutum of abdomen light brown, the abdomen elsewhere grey excepting the sides, which are darker. Posterior median eyes a little less than their diameter from each other, a little farther from the laterals. Tibia I with a single apical spine beneath; II with a submedian spine and a pair at apex; III and IV with no median dorsal spine. Metatarsus I and II with a pair of spines. Tibial apophysis of palpus as long as tibia, slender, bent upward at end, tip simple, nearly as in *H. cockerelli.*

Length, 8 mm.; cephalothorax, 3.5 mm.; tib.+pat. IV, 3.6 mm.

Female.—Septum of epigynum very slender anteriorly, widely clavate or cuneate behind.

Holotype.—M. C. Z. 618 (♀).

Locality.—Cal.: Stanford.

Herpyllus voluntarius (Chamberlin).

Scotophaeus voluntarius (Chamberlin), Jour. Ent. and Zool., 1919, 12, p. 5, pl. 2, f. 5.

Holotype.—M. C. Z. 361 (♀).

Locality.—Cal.: Claremont.

Herpyllus floridanus (Banks).

Prosthesima floridanus Banks, Trans. Am. Ent. Soc., 1896, 23, p. 61.

Holotype.—M. C. Z. 670 (♀).

Locality.—Fla.: Punta Gorda.

Herpyllus validus (Banks).

Prosthesima valida Banks, Trans. Am. Ent. Soc., 1896, 23, p. 62.

Holotype.—M. C. Z. 657 (♀). *Allotype.*—M. C. Z. 658 (♂).

Distribution.—Cal.: Los Angeles (type loc.), Claremont, Santa Barbara, Palo Alto.

Herpyllus swarzi (Banks).

Prosthesima swarzi Banks, Proc. U. S. N. M., 1901, 23, p. 582.

Holotype.—U. S. N. M. 5425 (♀).

Distribution.—Arizona: Catalina Springs (type loc.); Colorado.

Herpyllus bubulcus, sp. nov.

Female.—Cephalothorax and legs fulvous. Abdomen grey. Posterior median eyes their diameter apart, farther from laterals. Tib. I with a pair of ventral spines at distal end; II with a submedian pair in addition; III and IV with a median dorsal spine.

Length, 10 mm.; cephalothorax, 4.58 mm.; tib.+pat. IV, 5 mm.

Holotype.—M. C. Z. 586 (♀).

Locality.—Texas: Brewster Co., Altudo.

Resembles *swarzi* but differs in spining of tib. II and especially in form of epigynum.

Herpyllus cockerelli (Banks).

Prosthesima cockerelli Banks, Proc. Acad. Phil., 1901, 23, p. 571.

Cotypes.—M. C. Z. 673 and 674 (♀ ♂).

Locality.—N. M.: Mesilla Park.

Herpyllus cratus, sp. nov.

Female.—Carapace dusky chestnut, blackish on sides. Sternum reddish yellow. Legs chestnut. Abdomen light grey above and below, darker grey on the sides. Posterior median eyes a little less than their diameter apart and the same distance or slightly less from the laterals. Tib. I with one spine at distal end; II with a submedian one in addition; III with a median dorsal spine, but IV with none. Met. I unarmed; II with one spine at base. Epigynal depression prolonged anteriorly, the septal plate filling its posterior portion and narrowing caudad.

Length, 8 mm.; cephalothorax, 3.33 mm.; tib.+pat. IV, 3.5 mm.

Holotype.—M. C. Z. 603 (♀).

Locality.—Fla.: Punta Gorda.

Herpyllus pius (Chamberlin).

Journ. Ent. and Zool., 1919, 12, p. 6, pl. 2, f. 4.

Holotype.—M. C. Z. 365 (♀).

Distribution.—Cal.: Claremont (type loc.); La.: New Orleans.

Herpyllus angustus Banks.

Proc. Cal. Acad., 1904, ser. 3, Zool., 3, p. 331, pl. 40, f. 43.

Holotype.—M. C. Z. 671 (♂).
Distribution.—Cal.: San Pedro (type loc.), Claremont.

Poecilochroa Westring.

Güteb. Handl. (n. s.), 1874, 14, p. 42.

Genotype.—*P. variana* (C. Koch).

Poecilochroa montana Emerton.

Trans. Conn. Acad., 1890, 8, p. 175, pl. 4, f. 2, 2a.
?Drassus hunterae Blackwall, Ann. Mag. Nat. Hist., 1871, ser. 4, 8, p. 432.
nec *Poecilochroa montana* Emerton, Trans. Conn. Acad., 1909, 14, p. 217, pl. 9, f. 4, 4a, 4b.
Poecilochroa pacifica Banks, Jour. N. Y. Ent. Soc., 1896, 4, p. 89.

Holotype.—M. C. Z. 699 (♀).
Distribution.—New Hampshire: Mt. Washington (type loc.); N. Y.; Idaho; Wash.; Cal.; Quebec; Montreal.

Poecilochroa columbiana Emerton.

Can. Ent., 1917, p. 269, f. 21.

Cotypes.—M. C. Z. 700 (♂ ♀).
Distribution.—B. C.: Departure Bay (type loc.); Washington; Yakima River (S. Henshaw, 1882), Olympia.

Sergiolus Simon.

Proc. Zool. Soc. London, 1891, p. 573; Hist. Nat. Araign., I, 1893, p. 374.

Genotype.—*S. variegatus* (Hentz).
It is questionable whether this genus can be maintained apart from *Poecilochroa* with which it agrees closely in most structural features. It is retained tentatively on the basis of the characters given in the key.

Sergiolus variegatus (Hentz).

Herpylus variegatus Hentz, Jour. Bost. Sco. N. H., 1847, 5, p. 456, pl. 24, f. 12; Spiders U. S., 1875, p. 94, pl. II, f. 12.
Poecilochroa variegata Emerton, Trans. Conn. Acad., 1889, 8, p. 174, pl. 4. f. 1; Common Spiders, 1902, p. 4., f. 9–11.
Sergiolus variegatus Simon, Proc. Zool. Soc. Lond., 1891, p. 573.

Distribution.—Mass. (type loc.) and other New England States; New York; Ohio; Indiana; Illinois.

Sergiolus decipiens, sp. nov.

Male.—Color essentially as in *S. variegatus.* Uniformly smaller than that species, with the posterior row of eyes less recurved and the lateral eyes on each side thus nearer together. Easily separable by form of tibial apophysis of palpus which near its distal end is ridged transversely, the

apex beyond the ridge or fold triangular, not at all uncate. May be separated from *S. unimaculatus* Em. in having no spine on anterior face of tib. I but with one on anterior face of II, and in having the tibial apophysis of palpus bending away from tarsus distally instead of being closely applied to it.

Length, 5 mm.

Holotype.—M. C. Z. 604 (♂).

Distribution.—N. C.: Raleigh (type loc.); Texas; California.

Sergiolus unimaculatus Emerton.

Trans. Conn. Acad., 1915, 20, p. 142, pl. I, f. 9–9e.

Holotype.—M. C. Z. 701 (♂).

Locality.—Conn.: Lyme.

Sergiolus tennesseensis, sp. nov.

Female.—Carapace dusky, more fulvous at middle. Sternum chestnut. Femora of legs black, the more distal joints yellow or reddish yellow. Abdomen black above with three light cross bands; venter with a pale area narrowing caudad. Lateral eyes separated by more than their diameter. Area of median eyes as wide in front as behind. Met. I unarmed; II with a single spine. Tib. I and II with two seriate spines under anterior border.

Length, 7 mm.; cephalothorax, 2.7 mm.; tib.+pat. IV, 2.7 mm.

Holotype.—M. C. Z. 608 (♀).

Locality.—Tenn.: Robertson Co., Glenraven.

Sergiolus stella, sp. nov.

Female.—Carapace and sternum yellow. Femora of legs dusky brown or blackish, the distal joints yellow. Abdomen above at base with a light mark furcate behind and a light transverse band in front of spinnerets; venter yellowish. Area of median eyes much wider behind than in front. Met. I and II with one spine. Tib. I and II with two seriate spines under anterior border. Epigynal area elongate, with a transverse rim anteriorly, the depression each side of septum unusually small.

Length, 7 mm.; cephalothorax, 3.63 mm.; tib.+pat. IV, 2.7 mm.

Holotype.—M. C. Z. 599 (♀).

Locality.—Tex.: Austin.

Sergiolus famulus, sp. nov.

Female.—Carapace fulvous, more orange anteriorly. Sternum yellow. Abdomen above dark greyish brown with a light spot at each anterolateral corner and a narrow transverse light stripe across the middle and continuing caudad on each side, the two end portions converging. Lateral eyes separated by more than the diameter of an anterior one. Area of median eyes slightly wider behind than in front. Met. I unarmed; II with one spine. Tib. I and II with only a single spine beneath, this at distal end. Epigynal depression wider transversely and proportionately shorter longitudinally than in *variegatus*.

Length, 8 mm.; cephalothorax, 3.33 mm.; tib.+pat. IV, 2.7 mm.

Holotype.—M. C. Z. 612 (♀).
Locality.—D. C.: Washington.

Sergiolus bicolor Banks.

Can. Ent., 1900, p. 96.

Holotype.—M. C. Z. 722 (♀).
Locality.—La.: Covington.

Sergiolus clericus, sp. nov.

Female.—Carapace fulvous to light chestnut. Sternum and legs similar or more yellowish. Abdomen black above with a single narrow transverse stripe of white narrowly broken at middle line and a light spot at each anterolateral corner. Area of median eyes a little wider behind than in front. Met. I with one spine, II with two. Tib. I with one spine; II with two seriate ones. Epigynum nearly as in *bicolor*.

Length, 7.5 mm.; cephalothorax, 3 mm.; tib.+pat. IV, 2.5 mm.
Holotype.—M. C. Z. 609 (♀).
Locality.—D. C.: Washington.

Sergiolus minutus (Banks).

Poecilochroa minuta Banks, Can. Ent., 1898, p. 185.

Holotype.—M. C. Z. 723 (♂).
Locality.—Texas: Brazos Co.

Sergiolus tribolus, sp. nov.

Male.—Carapace and legs yellowish brown, sternum yellow. Abdomen black with a broader transverse white stripe across anterior end and a narrower one across middle, the latter produced forward at its middle. Area of median eyes narrower in front than behind. Met. I and II with a pair of spines. Tib. I with a pair of spines; II with a pair and a single one. Tibial apophysis differing from that of all others in having a three-pronged apex, the prongs very short.

Length, 5 mm.; cephalothorax, 2.29 mm.; tib.+pat. IV, 2 mm.
Holotype.—M. C. Z. 724 (♂).
Distribution.—Fla.: Punta Gorda (type loc.), Runnymede.

Sergiolus meretrix, sp. nov.

Poecilochroa montana Emerton, Trans. Conn. Acad., 1909, 14, p. 217, pl. 9, f. 4, 4a, 4b, but not of Emerton 1890.

Male.—Carapace, sternum and legs yellow. Abdomen black above with three rather broad transverse stripes of white of which the middle one is broken at the middle. Posterior row of eyes more strongly recurved than usual. Area of median eyes much wider behind than in front. Met. I and II with a pair of spines.

Length, 4.6 mm.; cephalothorax, 2 mm.; tib. + pat. IV, 1.87 mm.
Holotype.—M. C. Z. 611 (♂).
Distribution.—N. C.: Raleigh (type loc.); Mass.

Sergiolus cyaniventris Simon.

Ann. Ent. Soc. France, 1893, p. 311.

Locality.—Fla. (type loc.).

NODOCION, gen. nov.

Eye characters as in *Drassyllus* but armature of chelicera nearly as in *Herpyllus*.

Genotype.—*N. mateonus*, sp. nov.

Nodocion mateonus, sp. nov.

Female.—Carapace and sternum yellow. Legs yellow excepting first two pairs which are brown distad of patellae. Abdomen yellowish above with a median longitudinal darker stripe that expands toward caudal end. Posterior row of eyes procurved; median eyes oblique and angular and much larger than the laterals, less than their radius apart. Eyes of anterior row equal, clypeus narrower than their diameter. Met. I and II with one spine or I with none. Tib. I with one spine; II with two seriate ones. Epigynum of *Sergiolus* type.

Length, 6.25 mm.; cephalothorax, 2.66 mm.; tib.+pat. IV, 2.4 mm.

Holotype.—M. C. Z. 617 (♀).

Locality.—California: San Mateo.

Nodocion barbaranus, sp. nov.

Female.—Carapace and legs dusky chestnut, sternum clearer chestnut. Abdomen nearly black above, greyish below. Posterior row of eyes straight; median eyes large and nearly contiguous, less than their radius from the laterals. Anterior median eyes smaller than the laterals. Met. I and II with a pair of spines. Tib. I and II with no ventral spines. Epigynum suggesting the usual *Drassyllus* type.

Length, 9 mm.; cephalothorax, 3.5 mm.; tib. + pat. IV, 3.66 mm.

Holotype.—M. C. Z. 656 (♀).

Locality.—Cal.: Santa Barbara.

Nodocion iugans, sp. nov.

Male.—Carapace and legs light brown, the sternum more yellow. Abdomen dark grey, the scutum weak, not differently colored. Posterior row of eyes procurved; the medians large and oblique, nearly contiguous, and only about half their radius from the laterals. Laterals eyes separated by the radius of a posterior one. Anterior median eyes two-thirds the diameter of the laterals. Area of median eyes wider behind than in front. Met. I with one spine at base, II with a pair. Tib. I and II unarmed. Upper margin of furrow of chelicera with a chitinous angle above which are two or three denticulations and below it one obscure one. Tibial apophysis of palpus distally truncate. Embolus curved mesad parallel to base on which is a tooth.

Length, 5.8 mm.; cephalothorax, 2.5 mm.; tib. + pat. IV, 2.66 mm.

Holotype.—M. C. Z. 654 (♂).

Locality.—Cal.: Santa Barbara.

MEGAMYRMECION Reuss.

Zool. Miscell., Ar., 1834, p. 217.
Dyction Walckener, Ins. Apt. I, 1837, p. 380.
Genotype.—M. caudatum Reuss.

Megamyrmecion californicum Simon.

Ann. Soc. Ent. France, 1893, p. 308.
Locality.—California, southern part.

CESONIA Simon.

Hist. Nat. Araign., I, 1893, p. 375.
Genotype.—C. bilineata (Hentz).

Cesonia bilineata (Hentz).

Herpyllus bilineatus Hentz, Jour. Bost. Soc. Nat. Hist., 1847, 5, p. 456; Spiders U. S., 1875, p. 92, pl. II, f. 5.
Poecilochroa bilineata Emerton, Trans. Conn. Acad., 1890, p. 11, pl. 4, f. 3.
Cesonia bilineata Simon, Hist. Nat. Araign., I, 1893, p. 375; Comstock, Spider Book, 1912, p. 320, f. 309.
Distribution.—N. C. (type loc.); Ala. and other southern states; New England; Ohio; Indiana.

LITOPYLLUS, gen. nov.

Affinities with *Herpyllus* but the posterior row of eyes more procurved and, in particular, the median eyes of this row larger than the laterals and close to each other. Tibial apophysis of palpus distal in position and very short.
Genotype.—L. temporarius, sp. nov.

Litopyllus temporarius, sp. nov.

Male.—Carapace fulvous, the legs more orange. Sternum yellowish. Abdomen grey excepting the scutum which is colored like the carapace. Posterior row of eyes decidedly procurved; the median eyes one-fifth their diameter apart, their radius from the laterals. Area of median eyes as wide in front as behind. Met. I and II with a single spine. Tib. I and II with two spines in series under anterior border.
Length, 6 mm.; cephalothorax, 2.75 mm.; tib. + pat. IV, 2.75 mm.
Holotype.—M. C. Z. 602 (♂).
Locality.—Ky.: near Mammoth Cave.

Litopyllus luteus (Barrows).

Prosthesima lutea Barrows, Ohio Jour. Sci., 1919, 19, p. 356.
Holotype.—Ohio State Univ. (♂).
Locality.—Ohio: Sugar Grove.

Litopyllus rupicolens, sp. nov.

Female.—Carapace and legs fulvous, the sternum more yellow. Abdomen grey, without markings. Posterior row of eyes decidedly procurved;

the median eyes angular and oblique, less than half their longer diameter apart and about four-sevenths that diameter from the laterals. Area of median eyes wider in front than behind. Met. I and II with one spine. Tib. I and II with two seriate spines under anterior border.

Length, 6.75 mm.; cephalothorax, 2.9 mm.; tib. + pat. IV, 2.29 mm.

Holotype.—M. C. Z. 577 (♀).

Locality.—N. Y.: Sea Cliff (type loc.); Va.: Great Falls.

Scopodes, gen. nov.

Suggesting *Megamyrmecion* in eye characters but differing in having a tooth on the lower margin of the furrow of the chelicera and particularly in having a stout median ventral apophysis on bulb of palpus of male.

Genotype.—*S. catharius*, sp. nov.

Scopodes catharius, sp. nov.

Male.—Carapace and legs light brownish yellow. The sternum clearer yellow. Abdomen grey, its scutum small, yellow. Posterior row of eyes strongly procurved; median eyes elliptic, their radius apart, half as far again from the laterals. Lateral eyes less than their radius apart. Met. I with one spine; II with two spines. Tib. I and II with three pairs of spines. Tib. III and IV with a median dorsal spine.

Length, 6 mm.; cephalothorax, 2.7 mm.; tib. + pat. IV, 3.33 mm.

Holotype.—M. C. Z. 630 (♂).

Locality.—Cal.: Claremont.

Laronia Simon.

Ann. Soc. ent. France, 1892, p. 457; Hist. Nat. Araign., 1893, I, p. 379.

Genotype.—*L. rufithorax* Simon.

Laronia bicolor (Banks).

Eilica bicolor Banks, Trans. Am. Ent. Soc., 1896, 23, p. 60.

Holotype.—M. C. Z. 706 (♂).

Locality.—Fla.: Punta Gorda.

Gnaphosa Latreille.

Nouv. Dict. Hist. Nat., 1804, 24, p. 134.
Drassus Walckenaer, Tabl. Aran., 1805, p. 45.
Pythonissa C. Koch, Ueb. Ar. Syst., I, 1837, p. 16.

Genotype.—*G. lucifuga* Latreille.

Gnaphosa gigantea Keyserling.

Verh. Zool-bot. Ges. Wien., 1887, p. 424, f. 3; Comstock, Spider Book, 1912, p. 320, f. 311 and 312.

Gnaphosa conspersa Thorell, Bull. U. S. Geol. Survey, 1877, 3, p. 489; Emerton, Trans. Conn. Acad., 1889, p. 176, pl. 4, f. 4; Common Spiders, 1902, p. 2, f. 3–5.

Gnaphosa distincta Banks, Proc. Acad. Phil., 1901, p. 572 (nec *distincta* Banks, 1898).

Holotype.—M. C. Z. 707 (♀).

Distribution.—New York (Sullivan Co., type loc.) and other eastern states with eastern Canada and westward to Colorado, New Mexico, Utah and California.

Gnaphosa brumalis Thorell.

Proc. Bost. Soc. N. H., 1875, 17, p. 497; Emerton, Trans. Conn. Acad., 1889, 8, p. 175, pl. 4, f. 5.
Gnaphosa scudderi Thorell, Bull. U. S. Geol. Survey, 1877, 3, p. 491.
Gnaphosa humilis Banks, Proc. Acad. Phil., 1892, p. 19, pl. I, f. 9.

Distribution.—Canada: Labrador, Anticosti Id., Ottawa, Rocky Mts.; N. H.; N. Y.; Col.

Gnaphosa sericata (L. Koch).

Pythonissa sericata L. Koch, Drassiden, 1866, p. 31, pl. 2, f. 21.
Herpyllus bicolor Hentz, Jour. Bost. Soc. N. H., 1847, 5, p. 456, pl. 24, f. 4; Spiders U. S., 1875, p. 91, pl. II, f. 4, (Nom. preocc. by Hahn, 1831).
?Drassus diversus Blackwall, Ann. Mag. Nat. Hist., 1871, ser. 4, 8, p. 433.
Gnaphosa sericata Comstock, Spider Book, 1912, p. 321.

Distribution.—Md.: Baltimore (type loc.); Va.; N. C.; Ga.; Ala.; Fla.; N. Y.; Mo.; Ohio; Ind.; Mo.; Tex.; Col.

Gnaphosa texana, sp. nov.

Male.—Carapace almost black. Sternum fulvous. Legs dusky proximally. Abdomen grey, paler beneath. Posterior median eyes about their radius apart and once-and-a-half their diameter from the laterals. Lateral eyes separated by twice the diameter of the posterior one. Met. I and II with two pairs of ventral spines. Tib. I and II with five ventral spines. Tib. II and IV with a median dorsal spine. Embolus of male palpus making a complete turn about periphery of bulb. Tibial apophysis shorter than tibia.

Length, 6 mm.; cephalothorax, 3 mm.; tib. + pat. IV, 2.7 mm.

Holotype.—M. C. Z. 591 (♂).

Locality.—Texas: Austin.

Gnaphosa fontinalis Keyserling.

Verh. zool.-bot. Ges. Wien, 1887, p. 426, f. 4.
Gnaphosa americana Banks, Trans. Am. Ent. Soc., 1896, 23, p. 61.

Holotype.—M. C. Z. 708 (♀).

Distribution.—Ky.: Bee Spring (type loc.); New York; Texas.

Gnaphosa altudona, sp. nov.

Female.—Cephalothorax and legs yellow. Abdomen light grey. Posterior median eyes angular, half their longer diameter apart. Lateral eyes less than their diameter apart. Anterior row recurved. Met. I and II with three spines beneath. Tib. I unarmed; II with an apical spine. Tib. III with no median dorsal spine.

Length, 5.5 mm.; cephalothorax, 1.9 mm.; tib. + pat. IV, 1.8 mm.
Holotype.—M. C. Z. 573 (♀).
Locality.—Texas: Brewster Co., Altudo.

Gnaphosa californica Banks.

Proc. Cal. Acad. Sci., 1904, ser. 3, 3, p. 335, pl. 37, f. 10.

Cotypes.—M. C. Z. 709 (♀).
Distribution.—Cal.: Claremont (type loc.); Santa Cruz Id.

Gnaphosa parvula Banks.

Trans. Am. Ent. Soc., 1896, 23, p. 61; Emerton, Trans. Conn. Acad., 1909, 14, p. 218, pl. 9, f. 3.

Cotypes.—M. C. Z. 726 (♀) and 727 (♂).
Distribution.—N. H.: Hanover (♀) and Franconia (♂) (type localities); Mass.; N. Y.; Va.

Gnaphosa orites, sp. nov.

Male.—Carapace and legs black over chestnut. Abdomen greyish black. Posterior median eyes about one-third their diameter apart, and once and a half their diameter from the laterals. Met. I and II with one ventral spine. Tibia I and II with a distal spine. Embolus not coiled, short and straight, anterior in position.

Length, 8 mm.; cephalothorax, 3.56 mm.; tib. + pat. IV, 3.33 mm.
Holotype.—M. C. Z. 619 (♂).
Distribution.—Me.: Mt. Katahdin (type loc.); N. H.: Mt. Washington.

Callilepis Westring.

Göteb. Handl. (n. s.), 1874, 14, p. 43.

Genotype.—C. nocturna (Linne).

Callilepis imbecilla (Keyserling).

Pythonissa imbecilla Keyserling, Verh. zool.-bot. Ges. Wien, 1887, 37, p. 427, f. 15.
Callilepis pluto Banks, Trans. Am. Ent. Soc., 1896, 23, p. 60.

Holotype.—M. C. Z. 702 (♀).
Distribution.—Ky.: Bee Spring (type loc.); Va.; N. C.; Fla.; N. H.; Mass.; N. Y.; Ohio: Columbus; Wash.: Olympia, Pullman.

Callilepis clara (Keyserling).

Pythonissa clara Keyserling, Verh. zool.-bot. Ges. Wien, 1887, 37, p. 429, f. 6.

Holotype.—M. C. Z. 705 (♂).
Locality.—Utah: Bridger Basin.

Drassodes Westring.

Aran. Suec., 1861, p. 360.

Genotype.—D. lapidosus (Walck.).

The genus is here used in a restricted sense on characters partially indicated in the key.

Drassodes neglectus (Keyserling).

Drassus neglectus Keyserling, Verh. zool.-bot. Ges. Wien, 1887, 37, p. 434, f. 10.

Drassus saccatus Emerton, Trans. Conn. Acad., 1889, 8, p. 178, pl. 4, f. 7; Common Spiders, 1902, p. 6, f. 19.

Drassus inornatus Banks, Ann. N. Y. Acad., 1895, 8, p. 420.

Holotype.—M. C. Z. 688 (♀).

Distribution.—"U. S." (type loc.): New England and North Central States and westward to Colorado and Utah; Canada.

Drassodes celes Chamberlin.

Jour. Ent. and Zool., 1919 (Adv. reprint), and 1920, 12, p. 5, pl. 2, f. 2.

Holotype.—M. C. Z. 360 (♀).

Distribution.—California: Claremont (type loc.); Arizona.

Drassodes robinsoni Chamberlin.

Ann. Ent. Soc. America, 1919, 12, p. 245, pl. 16, f. 2.

Holotype.—M. C. Z. 418 (♀).

Locality.—Utah: Fillmore.

Geodrassus, gen. nov.

It may be noted that the tibia of the male palpus, while clearly longer than the patella, is only as long as, or but little longer than the tarsus, its apophysis inconspicuous. Bulb of palpus with a small terminal apophysis near conductor.

Genotype.—*G. gosiutus* (Chamberlin).

Geodrassus gosiutus (Chamberlin).

Drassodes gosiutus Chamberlin, Ann. Ent. Soc. Am., 1919, 12, p. 245, pl. 16, f. 3.

Holotype.—M. C. Z. 389 (♂).

Locality.—Utah: Fillmore.

Geodrassus phanus, sp. nov.

Female.—Carapace and legs light brown. Abdomen brownish grey above, clearer grey below. Posterior median eyes angular and oblique, about their radius from each other, and once and a half their long diameter from the laterals. Laterals about five-sevenths their diameter apart. Tib. I and II with a single spine beneath.

Length, 9 mm.; cephalothorax, 4.38 mm.; tib. + pat. IV, 4 mm.

Holotype.—M. C. Z. 575 (♀).

Locality.—N. Y.: Sea Cliff.

May be distinguished from *auriculoides* in having lateral eyes nearer each other, the shorter tib. + pat. IV, and proportions and details of epigynum.

Geodrassus auriculoides (Barrows).

Drassodes auriculoides Barrows, Ohio Jour. Sci., 1919, 19, p. 355, pl. 15, f. 4a–4b.

Holotype.—Coll. Ohio State Univ., (♀).
Distribution.—Ohio: Rockbridge (type loc.); Michigan; New York.

Sosticus, gen. nov.

In general structure near *Drassodes* but readily separable in the different armature of the chelicera. Males not known. Epigyna elongate and with a prominent median process projecting caudad in the depression.
Genotype.—*S. continentalis*, sp. nov.

Sosticus continentalis, sp. nov.

Female.—Carapace and legs in type as preserved nearly chestnut, the femora, patellae and tibiae more dusky. Abdomen grey. In structure distinguishable from *S. insularis* in having the anterior median eyes smaller than the laterals, in having tib. + pat. IV longer than the cephalothorax instead of only equal to it, in having a series of five median dorsal spines on tibia IV instead of only two, and in the better development of the distal tooth of the lower margin of furrow of chelicera.
Length, 8.5 mm.; cephalothorax, 3.54 mm.; tib. + pat. IV, 4 mm.
Holotype.—M. C. Z. 659 (♀).
Locality.—Iowa: Dallas Co.

Sosticus insularis (Banks).

Herpyllus insularis Banks, Jour. N. Y. Ent. Soc., 1895, 3, p. 78.

Holotype.—M. C. Z. 660 (♀).
Locality.—N. Y.: Sea Cliff.

Rachodrassus, gen. nov.

In this genus the eye rows are unusually close together, the posterior one straight. Area of median eyes wider behind than in front. Anterior median eye much smaller than the laterals. Apophyses of bulb of palpus of male strongly developed.
Genotype.—*R. echinus*, sp. nov.

Rachodrassus echinus, sp. nov.

Male.—Carapace and femora of legs cloudy yellow, the sternum and distal joints of legs clearer yellow. Abdomen yellowish, with a spear-mark at base and a number of obscure, broken chevron marks behind. Met. I and II with two pairs of spines. Tib. I and II with three pairs of ventral spines. Ectal apophysis of bulb of palpus with a retrorse prong; tibial apophysis much shorter than tibia, distally acute.
Length, 5 mm.; cephalothorax, 2.62 mm.; tib. + pat. IV, 3 mm.
Length of ♀, 7.25 mm.; cephalothorax, 2.83 mm.; tib. + pat. IV, 3.2 mm.
Holotype.—M. C. Z. 613 (♂). *Allotype.*—M. C. Z. 614 (♀).
Locality.—Ky.: near Mammoth Cave.

Rachodrassus chera, sp. nov.

Female.—Carapace and legs light brown, the sternum more yellow. Abdomen above greyish yellow with a faint darker spot at base and incompletely developed chevrons behind. Met. I and II with two pairs of spines. Tibia I and II with two pairs and one single spine below, the single spine distal.

Length, 6 mm.; cephalothorax, 2.5 mm.; tib. + pat. IV, 2.5 mm.

Holotype.—M. C. Z. 601 (♀).

Locality.—Ky.: near Mammoth Cave.

HAPLODRASSUS, gen. nov.

In addition to characters noted in the key, it may be mentioned that the bulb of the male palpus has a well-developed median ventral apophysis and also an ectal one. Posterior median eyes large, oblique, and near together.

Genotype.—H. hiemalis (Emerton)

Haplodrassus hiemalis (Emerton).

Trans. Conn. Acad., 1909, 14, p. 218, pl. 9, f. 1.

Cotypes.—M. C. Z. 686 (♀) and 687 (♂).

Distribution.—N. H.: Lake Winnepesaukee, Three-mile Id. (type loc.); Mass.; Vt.; N. Y.; Newfoundland.

Haplodrassus taibo (Chamberlin).

Zelotes taibo Chamberlin, Jour. Ent. and Zool., 1919 (adv. reprint), and 1920, 12, p. 6, pl. 2, f. 5.

Holotype.—M. C. Z. 367 (♀).

Locality.—Cal.: Claremont.

Haplodrassus barberi (Banks).

Prosthesima barberi Banks, Proc. U. S. N. M., 1902, 25, p. 212.

Cotypes.—U. S. N. M. (♀).

Locality.—Ariz.: Williams.

Placed in the genus with some doubt as the types have not been examined.

Haplodrassus bicornis (Emerton).

Drassus bicornis Emerton, Trans. Conn. Acad., 1909, 14, p. 218, pl. 9, f. 2.

Cotypes.—M. C. Z. 584 (♀) and 585 (♂).

Locality.—N. H.: Lake Winnepesaukee, Three-mile Id.

Haplodrassus mimus, sp. nov.

Female.—Carapace fulvous, dusky anteriorly, the sternum and legs similar but more yellow. Abdomen grey. Posterior row of eyes distinctly procurved; median eyes large, separated by less than one-third the long diameter, two-thirds that diameter from the laterals. Lateral eyes separated by about the radius of the anterior one. Met. I and II with a pair of

spines. Tib. I and II unarmed beneath. Lateral ridges of epigynum not cornuate anteriorly.

Length, 5.6 mm.; cephalothorax, 2.3 mm.; tib. + pat. IV, 2.1 mm.

Holotype.—M. C. Z. 583 (♀).

Distribution.—Va.: Great Falls (type loc.); N. M.

Haplodrassus eunis, sp. nov.

Female.—Cephalothorax and legs light brownish yellow. Abdomen above dark grey with a faint basal spear-mark, lighter grey below. Posterior row of eyes straight, the medians scarcely one-half their long diameter apart and about that diameter from the laterals. Lateral eyes about four-sevenths the diameter of the posterior one apart. Met. I and II with a pair of spines. Tib. I unarmed; II with a pair of submedian ventral spines. Lateral ridges of epigynum not cornuate anteriorly.

Length, 6.25 mm.; cephalothorax, 2.62 mm.; tib. + pat. IV, 2.3 mm.

Holotype.—M. C. Z. 680 (♀).

Locality.—Arizona.

Haplodrassus admes, sp. nov.

Female.—Carapace brownish yellow. Sternum and legs yellow. Abdomen yellowish grey, darker above. Posterior row of eyes plainly procurved; median eyes separated by less than half their longer diameter and from the laterals by less than that diameter. Lateral eyes on each side separated by radius of the posterior one. Met. I and II with a pair of spines. Tib. I unarmed; II with a single submedian spine. Lateral ridges of epigynum cornuate anteriorly.

Length, 5.5 mm.; cephalothorax, 2.08 mm.; tib. + pat. IV, 2 mm.

Holotype.—M. C. Z. 681 (♀).

Locality.—Arizona.

Haplodrassus signifer (C. Koch).

Drassus signifer C. Koch, Die Arachniden, 1839, 6, p. 31, pl. 188, f. 452.
Drassus troglodytes C. Koch, ibid., p. 35, pl. 189, f. 455 and 456.
Drassus clavator Cambridge, Ann. Mag. Nat. Hist., 1860, ser. 3, 5, p. 171; Blackwall, Spiders Gt. Brit., 1861, p. 109, pl. 6, f. 66.
Drassus robustus Emerton, Trans. Conn. Acad., 1889, 8, p. 179, pl. 4, f. 8.
Drassus placidus Banks, Trans. Am. Ent. Soc., 1893, 23, p. 63.
Teminius nigriceps Banks, Ann. N. Y. Acad., 1895, 8, p. 421.
Zelotes decepta Banks, Proc. Acad. Phil., 1900, p. 531.
Zelotes pacifica Banks, Proc. Cal. Acad., 1904, ser. 3, 3, p. 336, pl. 39, f. 15.
Drassodes robustus Comstock, Spider Book, 1912, p. 313, f. 303, 304.

Distribution.—Throughout the U. S. and Canada. It is also a common species in Europe.

Haplodrassus maculatus (Banks).

Zelotes maculatus Banks, Proc. Gal. Acad. Sci., 1904, ser. 3, 3, p. 336, pl. 11, f. 38.

Holotype.—M. C. Z. 888 (♂).

Locality.—California: Claremont.

In structure of palpal organ of male identical, or nearly so, with the preceding species, *H. signifer*. It is a smaller and lighter form of which the female is not yet known. Its precise relationship to *signifer* can not as yet be certainly determined.

ORODRASSUS, gen. nov.

Genotype.—O. coloradensis (Emerton).

Orodrassus coloradensis (Emerton).

Drassus coloradensis Emerton, Bull. U. S. Geol. Survey, 1877, 3, p. 528.
Teminius continentalis Keyserling, Verh. zool.-bot. Ges. Wien, 1887, p. 423, f. 2.
Drassodes melius Chamberlin, Ann. Ent. Soc. Am., 1919, 12, p. 246, pl. 16, f. 4, 5.

Distribution.—Colorado (type loc.); Utah.

Orodrassus assimilis (Banks).

Drassus assimilis Banks, Ann. N. Y. Acad., 1895, 8, p. 420.

Holotype.—M. C. Z. 689 (♂).
Locality.—Colorado: Ft. Collins.

Orodrassus vastus (Banks).

Drassus vastus Banks, Trans. Am. Ent. Soc., 1896, 23, p. 63.

Locality.—Wash.: Olympia (type loc.).

The type of this species can not at present be located, but it seems to be unquestionably close to *coloradensis*.

ZELOTES Gistl.

Naturg. 1848, p. 9.
Melanophora C. Koch, in Schaeffer, Deutsch, Ins. Arach., 1833, 120, 20–23,
Prosthesima L. Koch, Abh. Nat. Ges. Nurnberg, 1872, 6, p. 139.
Genotype.—Z. subterreaneus (C. Koch).

Zelotes subterreaneus (C. Koch).

Melanophora subterreanea C. Koch, Die Arachn., 1839, 6, p. 85, pl. 201, f. 491, 492.
Herpyllus ater Hentz, Amer. Jour. Sci., 1832, 21, p. 102; Jour. Boston Soc. N. H., 1847, 5, p. 455, pl. 24, f. 3; Spiders U. S., 1875, p. 91, pl. II, f. 3.
Prosthesima melancholica Thorell, Bull. U. S. Geol. Survey, 1877, 3, p. 493.
Prosthesima atra Emerton, Trans. Conn. Acad., 1889, 8, p. 172, pl. 3, f. 6; Common Spiders, 1902, p. 5, f. 14, 15, 16.
Zelotes ater Comstock, Spider Book, 1912, p. 316.
Zelotes fratris Chamberlin, Can. Ent., 1920, 52, p. 193, f. 18, 1 & 2. (var.).

Distribution.—Eastern U. S., both north and south, and westward to Utah and Washington but not as yet found in California where it seems to be displaced by other species. It is a common species in Europe.

Z. fratris is a varietal form showing differences in palpal organ of male but with no corresponding differences in the female that have thus far been detected.

Zelotes pseustes, sp. nov.

Male.—Carapace dusky chestnut, the legs dusky brown. Abdomen dark grey, scutum reddish or chestnut. Posterior row of eyes straight, the eyes equidistant or nearly so, the medians being about their diameter apart. Met. I and II with a pair of spines. Tib. I and II unspined; III and IV with no median dorsal spine. Tarsus of palpus with a ventral spine toward distal end; embolus with distal portion concealed by apical lobe, not lying in notch of tarsus. Tib. + pat. IV decidedly shorter than cephalothorax.

Length, 6.7 mm.; cephalothorax, 3.33 mm.; tib. + pat. IV, 2.7 mm.

Locality.—Texas: Austin.

Holotype.—M. C. Z. 598 (♂).

Zelotes duplex, sp. nov.

Male.—Carapace broad and low, black or nearly so. Legs blackish brown. Abdomen blackish above, the scutum dusky fulvous; venter grey. Eyes of the usual general arrangement. Area of median eyes a little wider behind than in front. Met. I and II with two pairs of long, overlapping spines. Tib. I with two pairs of spines; II with two seriate spines; III and IV with a median dorsal spine. Upper margin of furrow of chelicera with four teeth, the lower with three which are distinct.

Length, 6 mm.; cephalothorax, 2.5 mm.; tib. + pat. IV, 3.1 mm.

Holotype.—M. C. Z. 620 (♂).

Distribution.—Va.: Fairfax Co., (type loc.), Gt. Falls; N. C.: Black Mt.; N. Y.: Sea Cliff; Ohio.

An aberrant species.

Zelotes puritanus, sp. nov.

Female.—Carapace and legs dusky chestnut or blackish, the sternum clearer chestnut. Abdomen bluish black. Posterior row of eyes a little procurved; median eyes their diameter apart, nearer to the laterals. Area of median eyes wider behind than in front. Met. I and II and tib. I and II unarmed. Upper margin of furrow of chelicera with three teeth, the lower with only 1. Epigynum with an anterior transverse chitinous rim and a median plate expanded behind.

Length, 7 mm.; cephalothorax, 2.4 mm.; tib. + pat. IV, 2.33 mm.

Holotype.—M. C. Z. 574 (♀).

Locality.—Mass.: Wellfleet.

This is also an aberrant species.

Zelotes discens, sp. nov.

Female.—Black throughout excepting tips of legs and venter of abdomen in front of epigastric furrow. Posterior median eyes their radius apart and about five-sixths their diameter from laterals. Met. I unarmed; II with a single spine at base. Tib. I and II unarmed beneath. Upper

margin of furrow of chelicera with four teeth, the lower with one. Median plate of epigynum with three processes behind of which the lateral ones extend caudad beyond the median.

Length, 7 mm.; cephalothorax, 2.9 mm.; tib. + pat. IV, 2.7 mm.

Holotype.—M. C. Z. 615 (♀).

Locality.—Cal.: Stanford.

Zelotes perditus, sp. nov.

Female.—Carapace black or nearly so, the legs similar but lighter distally. Sternum chestnut. Abdomen dark above, the median ventral region paler. Posterior median eyes their radius apart and about two-thirds their diameter from the laterals. Met. I unarmed, II with a pair of spines. Tib. I and II unarmed. Upper margin of chelicera with four teeth, the lower with one. Epigynum suggesting that of funestus but the median plate with median process shorter and the lateral caudal angles not prolonged; an angle between anterior chitinous pockets.

Length, 7.7 mm.; cephalothorax, 3.3 mm.; tib. + pat. IV, 3 mm.

Holotype.—M. C. Z. 641 (♀).

Locality.—California: Stanford.

Zelotes funestus (Keyserling).

Prosthesima funesta Keyserling, Verh. zool.-bot. Ges. Wien, 1887, 37, p. 431, pl. 6, f. 8.

Holotype.—M. C. Z. 642 (♀).

Locality.—California.

This species has been placed in synonymy with *ater* Hentz (=*subterreaneus* C. K.) but is an obviously distinct species differing in epigynum and other structural features.

Zelotes paludis, sp. nov.

Female.—Carapace and legs dusky. Abdomen black above, paler beneath. Posterior row of eyes straight, the medians a little nearer to each other than to laterals. Met. I and II with two pairs of spines. Tib. I with three ventral spines; III and IV with median dorsal spine. Upper margin of furrow of chelicera with four teeth, the lower with three.

Length, 4 mm.; cephalothorax, 1.5 mm.; tib. + pat. IV, 1.62 mm.

Holotype.—Cornell Univ. Coll.

Locality.—Ga.: Okefenokee Swamp, Billy's Id.

Zelotes adolescens, sp. nov.

Male (immat.).—Carapace and sternum dusky chestnut, and the legs nearly black excepting the tarsi. Eyes of posterior row equal and nearly equidistant, the interval less than a diameter but more than a radius. Mt. I and II with two pairs of spines beneath. Tib. I and II with a submedian ventral spine; III and IV with no median dorsal spine. Upper margin of furrow of chelicera with four teeth, the lower with two.

Length, 5.6 mm.; cephalothorax, 2.3 mm.; tib. + pat. IV, 2.62 mm.

Holotype.—M. C. Z. 644 (not quite adult ♂).

Locality.—Cal.: Felton Big Trees.

Zelotes montereus, sp. nov.

Female.—Blackish throughout excepting venter of abdomen which is paler. Eyes of posterior row equal; medians their radius apart, five-sixths their diameter from the laterals. Met. I and II with a pair of spines. Tib. I and II unarmed. Upper margin of furrow of chelicera with four teeth, the lower with two. Epigynum most like that of *discens* but with a more prominent angle between anterior pockets which are nearer together.

Length, 8.5 mm.; cephalothorax, 3.1 mm.; tib. + pat. IV, 2.9 mm.

Holotype.—M. C. Z. 646 (♀).

Locality.—Cal.: Pacific Grove.

Zelotes tuobus Chamberlin.

Ann. Ent. Soc. America, 1919, 12, p. 247, pl. 16, f. 7.

Holotype.—M. C. Z. 387 (♀).

Locality.—Utah: Fillmore.

Zelotes gynethus Chamberlin.

Jour. Ent. and Zool., 1919 (adv. reprint), and 1920, 12, p. 7, pl. 3, f. 1.

Holotype.—M. C. Z. 363 (♀).

Locality.—Cal.: Claremont.

Zelotes (?) arizonensis (Banks).

Prosthesima arizonensis Banks, Proc. U. S. N. M., 1901, 23, p. 582.

Holotype.—U. S. N. M. 5424 (♀).

Locality.—Arizona: Catalina Springs.

Probably does not belong in this genus, but, as the type was not available for study, it is left tentatively in the group where described.

Drassyllus, gen. nov.

Genotype.—D. fallens, sp. nov.

Drassyllus fallens, sp. nov.

Prosthesima depressa Emerton (in part), Trans. Conn. Acad., 1911, 16, p. 406, pl. 5, f. 8, but not f. 8a, 8b, or 8c.

nec *Prosthesima depressa* Emerton, Trans. Conn. Acad., 1889, 8, p. 173, pl. 3, f. 8.

Female.—Carapace and sternum dusky brown or chestnut to nearly solid black. First and second legs black excepting the metatarsi and tarsi which are yellow. Posterior legs lighter throughout. Eyes nearly as in *depressus* Em., as is also spining of legs and armature of chelicerae. Median piece of epigynum distinct, expanded caudally and ending anteriorly near middle of length of median channel but not inversely T-shaped. Tib. + pat. I shorter than cephalothorax.

Length, 4–5 mm.; cephalothorax, 1.87 mm.; tib. + pat. IV, 1.95 mm.

Male.—Median ventral apophysis of bulb of palpus much more slender than in *depressus* and the tibial apophysis not at all geniculate.

Holotype.—M. C. Z. 634 (♀).

Distribution.—N. C.: Black Mt. (type loc.); Va.: Great Falls; Mass.: Blue Hill; N. Y.: Sea Cliff.

Drassyllus laccus (Barrows).

Prosthesima lacca Barrows, Ohio Jour. Sci., 1919, 19, p. 355, pl. 15, f. 3.

Type.—Ohio State Univ. Coll. (♂).
Locality.—Ohio: Columbus.
Known also from topotypes (♂, ♀).

Drassyllus depressus (Emerton).

Prosthesima depressa Emerton, Trans. Conn. Acad., 1909, 8, p. 173, pl. 3, f. 8.
Prothesima depressa Emerton (in part), ibid., 1911, 16, p. 406, pl. 5, f. 8a but not f. 8, 8b, or 8c.

Holotype.—M. C. Z. 711 (♀).
Distribution.—Mass.: Medford (type loc.); N. Y.; Ohio.

Drassyllus eremitus, sp. nov.

Female.—Coloration as in other members of the *depressus* group but the posterior legs black, or nearly so, as in the anterior pairs. Anterior median eyes only their radius or less apart. Upper margin of furrow of chelicera with four teeth, or with an obscure fifth one, the lower with three. Epigynum with a transverse anterior rim; with no septal piece in median channel.
Length, 4 mm.; cephalothorax, 1.66 mm.; tib. + pat. IV, 1.06 mm.
Holotype.— M. C. Z. 636 (♀).
Locality.—Tenn.; Robertson Co., Glenraven.

Drassyllus socius, sp. nov.

Prosthesima depressa Emerton (in part), Trans. Conn. Acad., 1911, 16, p. 406, pl. 5, f. 8b and 8c, but not 8 or 8a.

Male.—Very similar in appearance and structure to *depressus* but tibial apophysis of palpus smaller and less abruptly bent, and the median ventral apophysis of bulb of an obviously different form. Upper margin of furrow of chelicera with four teeth, the lower also with four instead of three.
Length, 4 mm.; cephalothorax, 1.75 mm.; tib. + pat. IV, 1.87 mm.
Holotype.—M. C. Z. 634 (♂).
Locality.—Mass.: Blue Hill, Milton.

Drassyllus rufulus (Banks).

Prosthesima rufula Banks, Proc. Acad. Phil., 1892, p. 17, pl. I, f. 55; Emerton, Trans. Conn. Acad., 1909, 14, p. 217, pl. 9, f. 6.
Prosthesima immaculata Banks, Proc. Acad. Phil., 1892, p. 18, pl. 1, f. 58.
Melanophora rufula Petrunkevitch, Ann. N. Y. Acad., 1910, 19, p. 207, pl. 21, f. 4.

Cotypes.—M. C. Z. 712 (♀).
Distribution.—N. Y.: Ithaca (type loc.), Sea Cliff, Lake Bluff; N. H.: Hanover; Ohio: Rockbridge.

Drassyllus blandus (Banks).

Prosthesima blanda Banks, Proc. Acad. Phil. 1892, p. 18, pl. I, f. 57.
Prosthesima minima Banks, ibid., p. 19, pl. 4, f. 89.
nec *Prosthesima blanda* Banks, Proc. Acad. Phil., 1901, p. 572.

Holotype.—M. C. Z. 713 (♂).
Locality.—N. Y.: Ithaca.

Drassyllus frigidus (Banks).

Prosthesima frigida Banks, Proc. Acad. Phil., 1892, p. 17, pl. I, f. 56.
Prosthesima nova Banks, Jour. N. Y. Ent. Soc., 1895, 3, p. 78.

Cotypes.—M. C. Z. 714 (♂) and 715 (♀).
Distribution.—N. Y.: Ithaca (type loc.), Sea Cliff; Penn.; Va.

Drassyllus virginianus, sp. nov.

Female.—Carapace chestnut, the sternum and legs somewhat lighter. Posterior row of eyes but little procurved; median eyes larger, oblique, one-fourth their lesser diameter apart, three-fourths that diameter from the laterals. Lateral eyes separated by the radius of a posterior one. Met. I and II with a pair of spines. Tib. I and II unarmed. Upper margin of furrow of chelicera with five teeth, the lower with three. Epigynum with a wide, transverse chitinous rim anteriorly; cavity narrowest at caudal end; septum narrowest at its middle.

Length, 7.5 mm.; cephalothorax, 3.1 mm.; tib. + pat. IV, 3.75 mm.
Holotype.—M. C. Z., 581 (♀).
Distribution.—Va.: Falls Church (type loc.), Great Falls; N. Y.: Sea Cliff.

Drassyllus lepidus (Banks).

Megamyrmecion lepidum Banks, Proc. Wash. Ent. Soc., 1899, 4, p. 190.
Drassinella lepida Banks, Bull. U. S. N. M., 1910, no. 72, p. 8.

Holotype.—M. C. Z. 715 (♀).
Locality.—La.: Shreveport.

Drassyllus louisianus, sp. nov.

Female.—Carapace and legs fulvous, the under parts more yellowish. Abdomen dark grey above, darker caudally, the venter lighter grey. All eyes of posterior row close together, each adjoining two separated by less than half the radius of an eye; median eyes large and oblique. Met. I and II with a pair of spines. Tib. I and II unarmed. Upper margin of furrow of chelicera with four teeth, the lower with three. Epigynum with a transverse anterior rim; septal plate completely filling depression or nearly so, expanded transversely behind, the lateral ends of expanded part covered.

Length, 7 mm.; cephalothorax, 2.5 mm.; tib. + pat. IV, 2.9 mm.
Holotype.—M. C. Z. 579 (♀).
Locality.—La.: Baton Rouge.

Drassyllus apachus, sp. nov.

Female.—Carapace dusky light brown to nearly black. Sternum and legs yellowish, the latter dusky proximally. Abdomen dark grey or black-

ish above, lighter below. Posterior row of eyes slightly procurved; median eyes large and oblique, nearly contiguous, a little farther from laterals. Upper margin of furrow of chelicera with five teeth, the lower with two. Met. I and II with a pair of spines. Tib. I unarmed; II with two seriate spines beneath; III and IV each with a median dorsal spine. Epigynum with a transverse chitinous rim anteriorly; cavity divided by a septum which is narrower than the portion of cavity each side.

Length, 5 mm.; cephalothorax, 2.3 mm.; tib. + pat. IV, 2.7 mm.

Holotype.—M. C. Z. 716 (♀).

Locality.—Arizona: Cottonia.

Drassyllus dixinus, sp. nov.

Female.—Cephalothorax and legs yellow. Abdomen above dark grey or blackish, lighter grey below. Posterior row of eyes procurved; median eyes large and oblique, contiguous with each other and less than their radius from the laterals. Lateral eyes only very narrowly separated from each other. Upper margin of furrow of chelicer with five teeth, the lower with two. Met. I and II with a pair of spines. Tib. I unarmed; II with a submedian spine. Septum of epigynum inversely T-shaped.

Length, 3.2 mm.; cephalothorax 1.33 mm.; tib. + pat. IV, 1.5 mm.

Holotype.—M. C. Z. 560 (♀).

Distribution.—La.: Mandeville (type loc.); Ga.: Okefenokee Swamp, Billy's Id.

Drassyllus orgilus, sp. nov.

Female.—Cephalothorax and legs fulvous. Abdomen grey, lighter ventrally. Posterior row of eyes procurved; eyes less than radius apart, the medians large as usual. Met. I and II with a pair of spines. Tib I unarmed; II with a submedian spine. Upper margin of furrow of chelicera with five teeth, the lower with three, or sometimes with only two. Epigynum with anterior rim meeting the lateral on each side in an acute, caudally projecting angle, strongly bent forward in an angle at middle.

Length, 7.3 mm.; cephalothorax, 2.7 mm.; tib. + pat. IV, 3.33 mm.

Holotype.—M. C. Z. 594 (♀).

Locality.—Texas: Austin.

Drassyllus transversus (Emerton).

Prosthesima transversus Emerton, Trans. Conn. Acad., 1911, 16, p. 406, pl. 5, f. 9, 9a, 9b.

Holotype.—M. C. Z. 690 (♂).

Locality.—Mass.: Blue Hill.

Drassyllus dromeus, sp. nov.

Male.—Carapace and legs fulvous. Sternum yellow. Abdomen dark grey above, lighter below. Posterior row of eyes slightly procurved; median eyes large and oblique, half their radius apart, their radius from the laterals. Upper margin of furrow of chelicera with five or six teeth, the lower with three, one of which may be obsolete. Met. I and II with a pair

of spines. Tib. I unarmed; II with 1 or 2 spines at middle and one at base. Tib. + pat. I longer than cephalothorax. Tibial apophysis of palpus straight; median ventral apophysis of bulb long, distally slender, extending well beyond anterior margin of alveolus.

Length, 5.37 mm.; cephalothorax, 2.25 mm.; tib. + pat. IV, 2.66 mm.

Holotype.—M. C. Z. 592 (♂).

Locality.—Texas: Austin.

Drassyllus niger (Banks).

Prosthesima niger Banks, Trans. Am. Ent. Soc., 1896, p. 62; Proc. Wash. Acad., 1900, 2, p. 478.

Cotypes.—M. C. Z. 718 (♀).

Drassyllus aprilinus (Banks).

Zelotes aprilinus Banks, Jour. N. Y. Ent. Soc., 1904, 12, p. 110, pl. 5, f. 7.

Holotype.—M. C. Z. 719 (♀).

Distribution.—Md.: Chevy Chase (type loc.); D. C.: Washington; Ala.; N. Y.: Sea Cliff.

Drassyllus femoralis (Banks).

Zelotes femoralis Banks, Proc. Cal. Acad., 1904, ser. 3, 3, p. 336, pl. 38, f. 1.

Holotype.—M. C. Z. 720 (♀).

Distribution.—Cal.: Claremont (type loc.); Fla.: Altoona; Va.: Falls Church.

Drassyllus liopus, sp. nov.

Male.—Cephalothorax and legs fulvous. Abdomen light grey, the scutum small, orange. Posterior row of eyes essentially straight; eyes close together, less than their radius apart, medians the larger. Met. I unarmed or with one spine; II with three spines. Tib. I and II unarmed. Upper margin of furrow of chelicera with five teeth, the lower with three. Tibial apophysis of palpus much shorter than tibia, its upper distal angle not prolonged; embolus mostly concealed.

Length 8 mm.; cephalothorax 3.4 mm.; tib. + pat. IV, 4.16 mm.

Holotype.—M. C. Z. 593 (♂).

Locality.—Texas: Austin (type loc.); Va.: Falls Church.

Drassyllus irritans (Chamberlin).

Zelotes irritans Chamberlin, Jour. Ent. and Zool., 1919 (adv. reprint), and 1920, 12, p. 6, pl. 2, f. 6.

Holotype.—M. C. Z. 366 (♂).

Distribution.—Cal.: Claremont (type loc.); Santa Cruz Id.; Sacramento.

The specimens from Santa Cruz Id. present certain differences but these seem not to be of specific value.

Drassyllus proclesis, sp. nov.

Male.—Carapace and legs testaceous, the sternum more yellowish. Abdomen grey, the scutum at base testaceous. Eye rows equal in length.

Posterior row a little procurved; median eyes larger, almost contiguous and only about half their radius from the laterals. Upper margin of furrow of chelicera with six teeth, the lower with three. Met. I and II with a pair of ventral spines. Tibia I unarmed; II with a submedian spine. Median ventral apophysis of bulb of apophysis narrowed distad, tip acute and curved ectad. Embolus exposed, distal end in situ resting in notch of tarsus.

Length, 6 mm.; cephalothorax, 2.5 mm.; tib. + pat. IV, 2.7 mm.

Holotype.—M. C. Z. 652 (♂).

Locality.—Cal.: Santa Barbara.

Drassyllus ethops (Chamberlin).

Zelotes ethops Chamberlin, Jour. Ent. and Zool., 1919 (adv. reprint), and 1920, 12, p. 7.

Holotype.—M. C. Z. 362 (im. ♂).

Locality.—California: Claremont.

Drassyllus lamprus (Chamberlin).

Zelotes lamprus Chamberlin, Can. Ent., 1920, p. 193, f. 3.

Holotype.—M. C. Z. 489 (♀).

Locality.—Utah: Mill Creek.

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PROCEEDINGS

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NEW ASTERACEAE FROM UTAH AND NEVADA.

BY S. F. BLAKE.

During the preparation of the manuscript of the family Asteraceae for Mr. Ivar Tidestrom's Flora of Utah and Nevada, the following undescribed species and subspecies have been found in the collections of the U. S. National Herbarium.

Chrysopsis viscida cinerascens Blake, subsp. nov.

Many-stemmed from a perennial base, 3 dm. high; stems erect, leafy, densely hispid-pilose and hispidulous with spreading hairs; leaves lance-obovate, 1.3 to 2.3 cm. long, 3 to 5 mm. wide, obtuse, narrowed to base, densely and rather harshly cinerascent-hispid-pilose with ascending hairs and gland-dotted; heads panicled, 1.5 cm. wide, the disk 8 mm. high; involucre 7 mm. high, the phyllaries lanceolate, acuminate, densely glandular; longer pappus bristles 6 mm. long, the shorter outer ones 0.6 mm. long.

Type in the U. S. National Herbarium, no. 508315, collected among rocks in the oak region, Beaver Cañon, Utah, September 2, 1909, by Ivar Tidestrom (no. 2873).

Related to *Chrysopsis viscida* (A. Gray) Greene, but distinguished by the dense pubescence of its stem and leaves.

Aplopappus brickellioides Blake, sp. nov.

Shrub; stem terete, about 2 mm. thick, white-barked, defoliate, rather densely hispidulous and pilosulous, many of the hairs thick and tipped with large yellow glands; young branches erect, straw-color, similarly pubescent, their internodes 2 to 7 mm. long; leaves alternate, sessile by a broad base, oval or ovate-oval, 1 to 2 cm. long, 5 to 12 mm. wide, acute, spinous-tipped, sharply dentate with 4 to 6 pairs of lanceolate or triangular acutely spinous-tipped teeth about 1.5 mm. long, triplinerved from the base or near it and loosely prominent-reticulate on both sides, light green, pubescent like the stem; upper leaves reduced, crowded; heads discoid, 12-flowered, sessile, solitary or in twos at tips of branches; disk campanulate, 8 mm. high, 6 to 7 mm. thick; involucre about 5-seriate, graduate, 7 mm. high, the phyllaries lanceolate to (inner) linear-lanceolate, acuminate or the outer merely acute, with indurated whitish 1-ribbed base and shorter (in the innermost phyllar-

ies obscure), firm but somewhat spreading herbaceous tip, densely covered on their exposed surface with large and small sessile and short-stipitate yellowish glands, and obscurely puberulous below; disk corollas apparently pale yellow, rather sparsely hispidulous with subglandular erect hairs on the lower half of the throat, 6 mm. long (tube 1.2 mm., throat slender, 4 mm., teeth triangular-ovate, obtusish, 0.8 mm.); achenes (immature) oblong, thickened (lenticular?), hispidulous; pappus a single series of about 18 subequal stiff barbellate bristles, 6 mm. long; style branches 1.7 mm. long, the appendages (0.7 mm. long) lance-ovate, obtusish, densely short-hispid outside; anther tips lance-subulate, acute, 0.35 mm. long.

Type in the U. S. National Herbarium, no. 348162, collected among rocks at Ash Meadows, Sheep Mount, Nevada, altitude 915–1220 meters, May-October, 1898, by C. A. Purpus (no. 6022).

This new species bears a remarkable superficial resemblance to species of *Coleosanthus* (*Brickellia*), and was originally distributed as *Brickellia atractyloides*. In all its technical characters, however, it is distinctly a member of the group of *Aplopappus* usually known as *Sideranthus*. In its truly shrubby stem it appears to be unique among the northern representatives of that group.

Aster glaucodes pulcher Blake, subsp. nov.

Similar to *Aster glaucodes*;[1] stem finely hirtellous, except at base, with mostly gland-tipped hairs, densely so in the inflorescence; phyllaries rather densely glandular-hirtellous on their exposed surface and obscurely ciliolate, the outer narrowly oblong, slightly obovate-oblong, or elliptic-lanceolate, with obscurely greenish rounded or obtuse rarely acute tip, the inner lance-linear or linear, acute or acuminate, sometimes purplish-tinged above.

Type in the U. S. National Herbarium, no. 326729, collected at Elk Ranch, Utah, September 12, 1894, by M. E. Jones (no. 6037).

Other specimens examined: Arizona: Bright Angel Trail, Grand Canyon, September 10, 1901, *Leiberg* 5937; same locality, October 22, 1905, *Eastwood* 2.

Aster bellus Blake, sp. nov.

Stems numerous, 6 to 12 cm. long, erect or ascending from a branching woody caudex, flexuous, usually branching, densely cinereous-strigose, very leafy; lowest leaves tufted, spatulate, 5 to 8 mm. long (including the narrowed petioliform base), 1.2 to 2 mm. wide, obtuse, 1-nerved, glandular and greenish along midline above, elsewhere densely cinerous-strigose, not ciliate; lower and middle leaves similar, grading into the linear or very narrowly linear-spatulate upper ones, these 4 to 7 mm. long, less than 1 mm. wide, acute, similarly pubescent, not ciliate; heads solitary at tips of stems and branches, on naked densely cinereous-strigillose peduncles 1 to 1.5 cm. long, the rays probably white, turning to reddish-purplish, the disk whitish, somewhat purplish-tinged when dry; disk about 8 mm. high and

[1] **Aster glaucodes** Blake, nom. nov. *Eucephalus glaucus* Nutt. Trans. Amer. Phil. Soc. n. ser. 7: 299. 1840. *Aster glaucus* Torr. & Gray, Fl. N. Amer. 2: 159. 1841. Not *A. glaucus* Nees. 1818.

wide; involucre about 4-seriate, strongly graduated, 6 to 7 mm. high, the phyllaries lanceolate, acuminate, shortly pilose-strigose, green-centered, more or less purplish above and toward margin, with narrow whitish scarious obscurely ciliate border; rays about 8 mm. long; achenes. 5-angled, densely subsericeous-pubescent between the angles; pappus bristles white, slender, stiff, 5 mm. long, a few shorter slender outer bristles sometimes present.

Type in the U. S. National Herbarium, no. 348129, collected in gravelly soil, Palmetto Range, Nevada, altitude 1830–2135 meters, May-October, 1898, by C. A. Purpus (no. 5906).

In Rydberg's key to *Leucelene* (Fl. Rocky Mts. 892) this species runs to *L. arenosa* Heller and *L. serotina* Greene. It is distinct in the dense cinereous strigosity of its leaves and stem.

Erigeron caespitosus anactis Blake, subsp. nov.

Rays wanting; involucre densely glandular-puberulous, sometimes also sparsely hirsute toward base.

Type in the U. S. National Herbarium, no. 348269, collected in rocky places, Mt. Irish, Nevada, May-October, 1898, by C. A. Purpus (no. 6321).

In its perennial caespitose habit, its densely spreading-hirsutulous stems (about 15 cm. high) and triplinerved spatulate-obovate or spatulate-oblanceolate obtuse or merely acute basal leaves, its solitary or paired heads, and conspicuously graduated involucre, this new subspecies agrees with typical *Erigeron caespitosus* Nutt. It differs conspicuously, however, in the lack of rays, and to a less degree in the paucity or entire absence of long hairs on the involucre, being approached in this latter character by some specimens of the typical form.

Bahia ourolepis Blake, sp. nov.

Few-stemmed erect perennial, 40 cm. high; stems whitish, appressed-puberulous in lines, bearing a few sessile glands toward apex; lowest leaves opposite, the others alternate, those above the lower third of stem greatly reduced; petioles slender, 1 to 2.5 cm. long, sparsely puberulous with appressed white hairs; blades elliptic or lance-ovate, 2.8 to 4.7 cm. long, 8 to 15 mm. wide, obtuse or acutish, acutely cuneate at base, entire, thick, impressed-punctate, puberulous with short appressed white hairs, glabrescent, 3-nerved; upper leaves much reduced, lanceolate or linear-subulate, 1 to 2 cm. long, 1 to 3 mm. wide; heads about 3, on pedicels 1 to 2.5 cm. long; disk hemispheric, 9 to 10 mm. high, 15 mm. thick; involucre 2-seriate, equal, 8 to 9 mm. high, the phyllaries lanceolate or linear-lanceolate, 1 to 1.5 mm. wide, narrowed into caudate-attenuate tips about 3 mm. long, sparsely appressed-puberulous dorsally, triplinerved; rays oval, yellow, tridenticulate, about 6 mm. long; disk corollas yellowish, stipitate-glandular especially on the tube, 5 to 5.5 mm. long (tube 1.5 mm. long, throat funnelform, 2.5 mm. long, teeth ovate, erect, 1 mm. long); disk achenes narrowly obpyramidal, 4-angled, 3.8 mm. long, hispidulous chiefly on the angles; pappus 2 mm. long, of 12 linear-oblong obtuse or emarginate squamellae with strong not excurrent midribs.

Type in the U. S. National Herbarium, no. 326737, collected at Green River, Utah, altitude 1370 meters, June 22, 1894, by M. E. Jones (no. 5482 l).

Bahia nudicaulis A. Gray, the only close relative of *B. ourolepis*, is distinguished by its stipitate-glandular as well as puberulous stem, the longer hairs of its leaves, and its much broader, oval to elliptic-obovate, densely stipitate-glandular, obtuse to acuminate, not caudate-tipped phyllaries. The type of *B. ourolepis* was distributed as *Bahia desertorum* M. E. Jones, but the type collection of that species in the National Herbarium is identical with *B. integrifolia*.

Bahia ourolepis belongs in the group of *Bahia* raised to generic rank as *Platyschkuhria* by Rydberg. The group has a characteristic aspect, but, as is the case with Rydberg's other segregates from *Bahia* (*Picradeniopsis* and *Amauriopsis*), the characters employed for separation do not seem to be of generic value. The whole group is much better retained in Gray's sense as a single genus with several sections, distinguished by habital features, by the proportions of the disk corollas, and, in the case of *Amauriopsis*, by the absence of pappus.

Tetradymia comosa tetrameres Blake, subsp. nov.

Closely similar to *T. comosa* in habit and foliage; fascicles of linear glabrate secondary leaves, about 1 to 1.5 cm. long, often present; involucre 7 to 10 mm. long, its phyllaries 4 or rarely 5, often more narrowly oblong than in the typical form; flowers 4 or sometimes 5.

Type in the United States National Herbarium, no. 1066206, collected at Corey Cañon, Wassuk Mountains, southwestern Nevada, altitude 1600 meters, June 27, 1919, by Ivar Tidestrom (no. 10072).

Additional specimens examined: Nevada: Winnemucca, Humboldt County, July, 1901, *Griffiths & Morris* 42, 95; in 1898, *V. Bailey*. Wadsworth, Washoe County, 1902, *Griffiths & Hunter* 550; in 1919, *Tidestrom* 10684. Western Nevada, 1875, *Lemmon*.

In typical *Tetradymia comosa* A. Gray, which occurs chiefly in southern California, the phyllaries are 5 or 6, and the flowers 6 to 9. It is possible that most if not all of the localities for *T. comosa* in the southern Sierra Nevada, Coso, and Panamint Mountains of California given in Coville's "Botany of the Death Valley Expedition" (Contr. U. S. Nat. Herb. 4: 141. 1893) relate to *T. comosa tetrameres*, but no material was preserved. The only material of true *T. comosa* seen from Nevada is a sheet (herb. N. Y. Bot. Gard.) collected in hills near Reno, altitude 1435 m., June 20, 1900, by S. G. Stokes.

The specimen in the Gray Herbarium collected by Lemmon was cited first in the description of the species. It is not to be taken as the type, however, both because it is merely a specimen in young bud, from which the characters could not have been drawn, and because the species was referred by Gray to the Section *Lagothamnus*, the chief character of which is the possession of a 5 to 9-flowered involucre of 5 or 6 phyllaries. There is in the National Herbarium a specimen in bud collected by Lemmon in 1875

and bearing a label indicating that it was collected in the Sierra Nevada Mountains of California. Dr. B. L. Robinson writes me that the specimen in the Gray Herbarium, of which he has kindly sent two heads for examination, has also a California label, but that it bears the notation "Nevada" in the hand of Dr. Gray. There can be little doubt that both specimens are of the same collection and from Nevada.

Ptiloria cinerea Blake, sp. nov.

Perennial (?), about 30 cm. high, freely divaricate-branched, densely cinereous-tomentulose throughout except on the involucres; lower leaves deciduous, the middle ones linear-lanceolate, 2.5 cm. long, about 5 mm. wide across the teeth, acuminate, runcinate-toothed; the upper entire, lance-subulate, 1 cm. long or less or reduced to scales; heads few or solitary at tips of branches and branchlets, erect, on pedicels 2 mm. long or less, 5-flowered; involucre cylindric, 7 to 8 mm. high, glabrous, the principal phyllaries 5, linear-oblong, obtuse or rounded, the calyculus of few unequal ovate acute or acutish phyllaries half as long as the inner, or less; corollas not well seen; achenes subcolumnar, 3.3 mm. long, 5-angled, whitish, slightly transverse-rugulose, obscurely hispidulous; pappus brownish-tinged, 5.5 mm. long, deciduous in a ring, the setae 14, merely hispidulous for 1 mm. at base, plumose above.

Type in the U. S. National Herbarium, no. 348173, collected in the Pahrump Valley, Nevada, altitude 610–915 meters, June, 1898, by C. A. Purpus (no. 6049). Duplicate in the herbarium of the University of California, no. 92336.

Other specimens examined: Nevada: Ash Meadows, May-October, 1898, *Purpus* 6080 (herb. Univ. Calif.).

At once distinguished from most members of the genus by its dense tomentose pubescence. It is nearest *P. canescens* Greene, of middle California, known to me only from description, which has a similar pubescence, but is said to be an annual with a pure white pappus plumose almost throughout. Unfortunately the specimens of *P. cinerea* which I have examined, including two loaned by Professor N. L. Gardner from the University of California Herbarium, do not show the base completely, but the species appears to be perennial.

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PROCEEDINGS

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TWO NEW SPECIES OF MORACEAE FROM SOUTH AMERICA.

BY S. F. BLAKE.

The two new species of the mulberry family here described from the South American collections of H. M. Curran are both good-sized forest trees of some commercial importance. Both species were studied at the request of Professor S. J. Record, of the Yale School of Forestry, who is engaged in a study of the woods of this family. The species of *Brosimopsis* is of interest as representing a second species of a hitherto monotypic genus.

Brosimum columbianum Blake, sp. nov.

Tree 30 m. high 60 cm. in diameter; branchlets greenish white, glabrous, obtusely angled, very leafy; petioles stout, sulcate above, sparsely pubescent, 3 to 5 mm. long; leaf blades ovate or oblong-ovate, 4 to 9 cm. long, 2 to 3.3 cm. wide, shortly falcate-acuminate with obtuse apex, rounded or cuneate-rounded at base, entire, subcoriaceous, pale green, glabrous, narrowly marginate, the costa flattish or slightly impressed above, prominent beneath, the lateral veins 12 to 14 pairs, flattish or obscurely prominulous above, prominent beneath, the secondaries finely reticulate but flat on both sides or even somewhat impressed beneath; receptacles solitary in the axils, subglobose, 1.5 mm. thick in youth, 11 mm. thick when submature, at first sessile, the pedicel becoming 1.5 mm. long at submaturity; receptacle minutely puberulous and covered with peltate finely puberulous and ciliolate bracts; pistillate flower solitary, the papillose style and stigmatic branches together 5 mm. long, exserted from a very early period (when receptacle is 1.5 mm. thick); staminate flowers not seen.

Type in the U. S. National Herbarium, no. 1,068,154, collected in the vicinity of Estrella, Caño Papayal, Lands of Loba, Bolívar, Colombia, April or May, 1916, by H. M. Curran (no. 304). Duplicate in the herbarium of Yale University.

The native name of this timber tree is given by Mr. Curran as "guayamero." The species is nearest *Brosimum alicastrum* Swartz, not definitely known from South America, but is distinguished by its smaller leaves and solitary always sessile young receptacles. It is probable that further differences will be found when more complete specimens are collected.

Brosimopsis diandra Blake, sp. nov.

Tree nearly 30 m. high, 0.5 m. thick; young branchlets purplish-brown, spreading-pilosulous, the older gray-barked, glabrous; buds subulate, sparsely sericeous-pubescent, about 5 mm. long; petioles narrowly channeled above, puberulous, 5 to 8 mm. long; stipules subulate, usually deciduous, about 5 mm. long; leaf blades oblong-elliptic or ovate-elliptic, 6 to 11 cm. long, 2 to 3.3 cm. wide, rather gradually and often falcately acuminate to an obtuse tip, at base broadly rounded or obscurely cordate, entire, subcoriaceous, brownish-green on both sides when dry, glabrous above, beneath obscurely strigillose along the costa and lateral veins and very sparsely so along the veinlets, feather-veined with 10 to 17 pairs of lateral veins, the costa impressed above, prominent beneath, the lateral veins flattish or slightly impressed above, prominulous beneath, diverging at nearly a right angle and uniting near the margin to form a looped submarginal vein, the veinlets rather finely reticulate, flattish above, prominulous beneath; peduncles (of staminate heads) axillary, solitary, erect, puberulous, 4 mm. long; staminate receptacle (before anthesis) subglobose, 4 mm. thick, with a few minute bracts at base, not definitely calyculate, densely covered with flowers and interspersed peltate bracteoles; flowers all staminate, without rudiment of ovary; bracteoles peltate, 1 mm. long, the slender stipe spreading-puberulous, the lamina suborbicular, puberulous on both sides and ciliolate; perianth (immature) 1 mm. long, slightly immersed in the receptacle, its segments 4, oblong, somewhat puberulous, cucullate-imbricate in bud; stamens always 2, erect in bud, the glabrous thick-subulate filaments about equaling the subquadrate truncate cordate-based 2-celled anthers.

Type in the U. S. National Herbarium, no. 704,482, collected in the Rio Grongogy Basin, Bahia, Brazil, altitude 100–500 meters, October-November, 1915, by H. M. Curran (no. 25). Duplicate in the herbarium of Yale University.

The native name of this tree is given as "leiteira" by Mr. Curran. The species is of considerable interest, since it evidently represents a second species of the hitherto monotypic genus *Brosimopsis* described in 1895 by Spencer L. Moore[1] from Santa Cruz, Matto Grosso, Brazil. In the type of the genus, *B. lactescens* S. Moore, the male plant is only a low tree, and the flowers are tetrandrous.

[1] Trans. Linn. Soc. Bot. II. 4: 473. *pl. 30, f. 6–12, pl. 31.* 1895.

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PROCEEDINGS

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STUDIES IN THE TYRANNIDÆ.

III. The South American Forms of Myiarchus.

BY W. E. CLYDE TODD.

Myiarchus is one of those involved groups of closely related forms which from the very beginning has been a source of trouble to the systematic ornithologist. With the same pattern of coloration running through the entire group, and such inconspicuous variations in form and proportion, it is little wonder that authors have often failed to appreciate the value of the characters of the specimens they handled, or to differentiate the forms represented. The small amount and usually poor quality of the available material have of course contributed largely towards the confusion from which the present group, in common with many others, has suffered. Mr. Ridgway, in the fourth volume of his great work on "The Birds of North and Middle America," having so satisfactorily elucidated the various forms of *Myiarchus* found in that section, it remains to work out the South American forms on the same lines. The present paper is offered as an attempt toward this end, and has been made possible as a result of the activities of several institutions in various parts of South America in recent years. No less than nine hundred and sixty-three specimens, including considerable typical and topotypical material, have been examined in the course of the present investigation. Of these four hundred and two are in the collection of the Carnegie Museum. The remainder have been loaned by the various institutions specified in Part I of the present series of papers, and our thanks are due to these parties, and also to Dr. Wilfred H. Osgood of the Field Museum of Natural History, Dr. E. W. Nelson of the Bureau of Biological Survey, and to Mr. Thomas E. Penard of Arlington,

Massachusetts, for similar courtesies. We are also indebted to Drs. Charles W. Richmond and Harry C. Oberholser for their kindness in verifying certain references. The present paper is governed by the same conditions as the first of the series.

The South American forms of *Myiarchus* fall naturally into four groups, typified respectively by *M. tyrannulus*, *M. pelzelni*, *M. ferox*, and *M. tuberculifer*. They range from Panama southward to Argentina, throughout the Tropical Zone, while all of the groups except the first have a single representative each in the Subtropical. One species is a winter visitant from eastern North America. *M. pelzelni* is said to be a bird of the campos region in Brazil, but the species in the main are forest-dwellers, with typical flycatcher habits, and nesting in holes in trees, in the well-known manner of *M. crinitus*. Wear and fading affect the color of the plumage greatly, while birds in juvenal and immature dress show more or less decided rufescent edgings on the wings and tail. Great care in making comparisons for geographical differences is thus indicated, while another source of error to be guarded against arises from the circumstance that preserved skins fade out with age, old specimens being appreciably paler than those freshly collected. The diagnoses and descriptions in the present paper are based (unless otherwise specified) on adult specimens in fresh unfaded plumage.

References to the birds of this group are very numerous in the literature of South American ornithology, but the various forms have been so imperfectly understood that the synonymy is exceedingly involved. In many cases it is difficult or impossible to determine from a study of the text what form or forms certain authors had in hand, and it is to be hoped that those European ornithologists who may have access to the specimens (if extant) on which such records were based will look them up and publish their results. The first serious attempt to review the group as a whole was by Coues in 1872. His treatment is very unsatisfactory, partly because of insufficient and poor material, and partly by reason of failure to realize the significance of the characters in this group. In some respects he even left the nomenclature in a more confused state than before. Sclater's treatment in Volume XIV of the Catalogue of the Birds in the British Museum (1888) was a great improvement, although he did not recognize subspecies. Mr. Ridgway indi-

cated the true systematic position of some of the South American forms in dealing with the North American members, while Mr. Hellmayr and the late Count von Berlepsch have made sundry contributions to the subject.

In the key which follows *Myiarchus semirufus* Sclater has not been included. This species has recently been made the type of a new genus, *Muscifur*, by Messrs. Bangs and Penard. Every one of the diagnostic structural characters claimed for it by these authors we find repeated in typical *Myiarchus*, leaving only the different color-pattern to be considered, and an additional character in what appears to be the rougher scutellation of the tarsi. Whether under the circumstances *Muscifur* deserves recognition is an open question. Probably it would be better to keep its type in *Myiarchus* in spite of its aberrant coloration.

Key to the South American Forms of Myiarchus.

A. Rectrices with more or less cinnamon.
  a. Throat and breast pale neutral gray; posterior under parts brighter yellow.....*Myiarchus crinitus.*
  a′. Throat and breast pallid neutral gray; posterior under parts paler yellow (*Myiarchus tyrannulus*).
    b. General coloration darker; upper parts more grayish.
      c. All the rectrices except the middle pair with broad inner margins of cinnamon, sharply defined from the brownish area.....*Myiarchus tyrannulus tyrannulus.*
      c′. Outer rectrices with little or no cinnamon, and the cinnamon color not sharply defined on any *Myiarchus tyrannulus bahiæ.*
    b′. General coloration paler; upper parts more greenish *Myiarchus tyrannulus pallescens.*
A′. Rectrices without cinnamon (except sometimes as a narrow external edging).
  a. Larger forms; wing of male averaging not less than 90 mm., of female not less than 85 mm.
    b. Pileum not strongly contrasted with the back.
      c. Rectrices without conspicuous paler tips.
        d. Tail relatively shorter, approximately nine-tenths of the wing; outermost (tenth) primary relatively longer, exceeding or only slightly shorter than fourth; bill weaker and lighter colored.
          e. Above lighter, more olivaceous.
            f. Above paler (Saccardo's olive); breast more strongly contrasted with abdomen *Myiarchus pelzelni.*

f′. Above darker (dark olive); breast less strongly contrasted with abdomen
Myiarchus sordidus.

e′. Above darker, more dusky.....*Myiarchus phæonotus.*

d′. Tail relatively longer, averaging more than nine-tenths of the wing; outermost (tenth) primary relatively shorter, conspicuously shorter than fourth; bill stouter and darker colored.

e. Outermost pair of rectrices without conspicuous paler external margins (*Myiarchus ferox*).

f. Above darker (dark olive)....*Myiarchus ferox ferox.*

f′. Above paler (light olive).

g. Above moderately pale (dull brownish olive).

h. Pileum more brownish
Myiarchus ferox swainsoni.

h′. Pileum more dusky
Myiarchus ferox venezuelensis.

g′. Above decidedly pale (Saccardo's olive)
Myiarchus ferox panamensis.

e′. Outermost pair of rectrices with conspicuous paler external margins.....*Myiarchus cephalotes.*

c′. Rectrices with conspicuous paler tips....*Myiarchus apicalis.*

b′. Pileum strongly contrasted with the back.

c. Pileum gray anteriorly, becoming black posteriorly
Myiarchus phæocephalus.

c′. Pileum wholly black.....*Myiarchus atriceps.*

a′. Smaller forms; wing of male averaging not more than 81 mm., of female not more than 75.5 mm. (*Myiarchus tuberculifer*).

b. General coloration duller; upper parts plain olive, the pileum darker, but not strongly contrasted with the back; gray of under parts deeper (pale neutral gray)
Myiarchus tuberculifer tricolor.

b′. General coloration somewhat brighter; upper parts between deep olive and citrine drab, the pileum dusky black, in contrast with the back; gray of under parts lighter (pallid neutral gray).....*Myiarchus tuberculifer tuberculifer.*

b″. General coloration decidedly brighter; upper parts olive citrine, the pileum deeper black in strong contrast; anterior under parts pallid neutral gray
Myiarchus tuberculifer nigriceps.

Myiarchus crinitus (Linnæus).

(South American references only.)

Myiarchus crinitus von Berlepsch, Journ. f. Orn., XXXII, 1884, 277, 303 (Bucaramanga, Colombia).—Bangs, Proc. Biol. Soc. Washington, XII, 1898, 137 ("Santa Marta," Colombia).—Allen, Bull. Am. Mus. Nat. Hist., XIII, 1900, 142 (Bonda, Colombia).—Allen, Auk, XVII, 1900, 364 (Bonda, Colombia; von Berlepsch's and Bangs' records).—

Nelson, Proc. Biol. Soc. Washington, XVII, 1904, 29 ("Santa Marta Mountains," Colombia, winter, in range).—Ridgway, Bull. U. S. Nat. Mus., No. 50, IV, 1907, 613 (Colombian localities and references).—Hellmayr, Proc. Zool. Soc. London, 1911, 1137 (Nóvita and Noanamá, Colombia; range; crit.).—Brabourne and Chubb, Birds S. Am., I, 1912, 302 (western Colombia, in range).—Chapman, Bull. Am. Mus. Nat. Hist., XXXVI, 1917, 474 (Noanamá, Puerto Valdivia, and La Manuelita, Colombia).—Todd and Carriker, Ann. Carnegie Mus., XIV, 1922, 348 (Santa Marta region, Colombia; localities and references).

Range.—Eastern North America, south in winter to northern and western Colombia.

Remarks.—The Crested Flycatcher is merely a winter resident in South America, reaching its southern limit at this season in Colombia, where it has been recorded in the Santa Marta region, and in the valleys of the Magdalena, Cauca, Atrato, and San Juan Rivers. It has been taken on November 1 in the fall movement, and as late as April 26 in the spring. The above comprise all the published records of its occurrence in this region we have been able to discover.

Specimens examined.—Colombia; Bonda, 1; Mamatoco, 1; El Tambor, 1; Sautata, 2; Quibdo, 1; Andagoya, 1; Total, 7.

Myiarchus tyrannulus tyrannulus (Müller).

"Tyrannus cayanensis minor" Brisson, Orn., II, 1760, 400 (Cayenne, French Guiana; descr.).

"Petit Tyran de Cayenne" D'Aubenton, Pl. Enlum., 1770–86, No. 571, fig. 1 (figure).—Buffon, Hist. Nat. Oiseaux, IV, 1778, 582 (Brisson's reference).

Muscicapa tyrannulus Müller, Syst. Nat. Suppl., 1776, 169 (Cayenne, French Guiana; orig. descr.; ex Pl. Enlum. 571, fig. 1).

"Tyrant Flycatcher, Var. A." Latham, Gen. Syn. Birds, II, 1782, 358 (Cayenne, French Guiana; descr., etc., ex Buffon).—Latham, Gen. Hist. Birds, VI, 1823, 241 (references; descr., etc.).

Muscicapa aurora Boddaert, Table Pl. Enlum., 1783, 34, excl. syn. (D'Aubenton's plate).

Muscicapa ferox, β Gmelin, Syst. Nat., I, 1788, 934 (Cayenne, French Guiana, ex Brisson and Buffon).—Latham, Index Orn., II, 1790, 485 (references).

"Suiriri pardo y roxo" Azara, Apuntamientos, II, 1805, 143 (Paraguay; descr.; habits).

Muscicapa flaviventris Vieillot, Ois. Am. Sept., I, 1807, 70, part (descr.; etc.).—Stephens, in Shaw's Gen. Zool., X, 1817, 342 (descr.; references).

Tyrannus ferox (not *Muscicapa ferox* Gmelin) Vieillot, Nouv. Dict. d'Hist. Nat., XXXV, 1819, 78, part (Paraguay, ex Azara).—Vieillot, Tabl. Enc. Méth., II, 1822, 848, part (Paraguay, ex Azara).—Temminck, Man. d'Orn., I, 1828, 172 (S. Am.; diag.; ex Swainson).

Tyrannus crinitus (not *Muscicapa crinita* Linnæus) D'Orbigny and Lafresnaye, Mag. de Zool., 1837, Syn. Avium, 43 (Corrientes, Argen-

tina).—D'Orbigny, Voy. Am. Mér., Oiseaux, 1844(?), 306, excl. syn. part (Corrientes, Argentina, and Yungas, Bolivia; descr.; habits; references).—Hartlaub, Index Azara, 1847, 13 (Azara's reference).

(?)*Myiarchus ferox* (not *Muscicapa ferox* Gmelin) Taylor, Ibis, 1864, 87 (Trinidad; Orinoco River, Venezuela).

Myiarchus tyrannulus Cassin, Proc. Acad. Nat. Sci. Philadelphia, 1864, 255 (Müller's reference).—Giebel, Thes. Orn., II, 1875, 662 (syn. [part]).—von Berlepsch, Ibis, 1883, 139, note (crit.).—Sclater and Hudson, Argentine Orn., I, 1888, 156 (Catamarca, Argentina; descr.).—Sclater, Cat. Birds Brit. Mus., XIV, 1888, 251, part (excl. West Indian and Bahia localities and references; descr.; crit.).—(?)Dalgleish, Proc. R. Phys. Soc. Edinburgh, X, 1889, 79 (Estancia Ytanu, Paraguay; descr. nest and eggs).—Kerr, Ibis, 1892, 130 (Fortin Nueve, Rio Pilcomayo, Argentina).—Allen, Bull. Am. Mus. Nat. Hist., IV, 1892, 342 (Chapadá, Matto Grosso, Brazil; crit.).—Hartert, Ibis, 1893, 298, in text (crit.).—Chapman, Bull. Am. Mus. Nat. Hist., VI, 1894, 44 (Princestown and Monos I., Trinidad).—Robinson and Richmond, Proc. U. S. Nat. Mus., XVIII, 1895, 673 (El Vallé, Margarita I., Venezuela; descr. nest and eggs).—Phelps, Auk, XIV, 1897, 365 (Cumaná, Cumanacoa, and San Antonio, Venezuela).—Dalmas, Mém. Soc. Zool. France, XIII, 1900, 139 (Tobago).—Kerr, Ibis, 1901, 226 (Waikthlatingmayalwa, Paraguay).—Sharpe, Hand-List Birds, III, 1901, 145 (in list of species; range).—Dubois, Syn. Avium, I, 1902, 250 (references; range).—Clark, Auk, XIX, 1902, 264 (Margarita I., Venezuela).—von Berlepsch and Hartert, Nov. Zool., IX, 1902, 51 (Altagracia, Caicara, and Ciudad Bolivar, Venezuela).—Lillo, An. Mus. Nac. Buenos Aires, (3), I, 1902, 187 (Tucumán and Tapia, Argentina).—Lönnberg, Ibis, 1903, 469 (Tatarenda, Bolivia).—Bruch, Rev. Mus. La Plata, XI, 1904, 254 (Salta, Oran, Argentina).—Baer, Ornis, XII, 1904, 221 (Santa Ana and Tapia, Tucumán, Argentina).—Ridgway, Bull. U. S. Nat. Mus., No. 50, IV, 1907, 610 (diag.; syn.).—Lowe, Ibis, 1907, 118 (Blanquilla I., Venezuela), 563 (Margarita I., Venezuela).—von Berlepsch, Ornis, XIV, 1907, 476 (in list of species).—von Berlepsch, Nov. Zool., XV, 1908, 127 (Cayenne, French Guiana).—Lowe, Ibis, 1909, 318 (Los Testigos Is., Blanquilla I., and Margarita I., Venezuela; Curaçao, Dutch West Indies; meas.; crit.), 322 (Cariaco Peninsula, Venezuela).—Cory, Field Mus. Orn. Series, I, 1909, 231 (Los Testigos Is., Venezuela), 246 (Margarita I., Venezuela).—Dabbene, An. Mus. Nac. Buenos Aires, (3), XI, 1910, 348, part (Argentine localities and range).—Penard, Vogels Guyana, II, 1910, 260 (Guiana; habits, etc.).—Grant, Ibis, 1911, 122 (Puerto Asir, Paraguay; Pan de Azucar, Brazil; Colonia Mihanovitch, Argentina).—Brabourne and Chubb, Birds S. Am., I, 1912, 302 (ref. orig. descr.; range).—Chubb, Birds British Guiana, II, 1921, 227, (British Guiana localities; descr.).

Myiobius stolidus (not of Gosse) Leotaud, Ois. Trinidad, 1866, 221 (Trinidad; descr., etc.).

Myiarchus erythrocercus Sclater and Salvin, Proc. Zool. Soc. London, 1868, 628 (Caracas, Venezuela), 631, part (orig. descr.; no type-locality

designated; crit.).—Wyatt, Ibis, 1871, 333 (Santa Marta, Colombia).—Sclater and Salvin, Nom. Avium Neotrop., 1873, 52, part (in list of species; range).—Sclater and Salvin, Proc. Zool. Soc. London, 1876, 16 (Maranura, Peru).—Salvin and Godman, Ibis, 1880, 125 (Santa Marta, Colombia).—Ridgway, Proc. U. S. Nat. Mus., III, 1880, 15, in text, part (range; crit.).—von Berlepsch, Ibis, 1883, 140, note (crit.).—Taczanowski, Orn. Pérou, II, 1884, 320 (Maranura, Peru, and Cayenne, French Guiana; descr.; crit.; references).—von Berlepsch, Journ. f. Orn., XXXV, 1887, 118 (Paraguay, ex Azara).—Salvadori, Bol. Mus. Zool. ed Anat. Comp. Torino, X, 1895, No. 208, 11 (Puerto Francia, Paraguay); XII, 1897, No. 292, 16 (Caiza and San Lorenzo, Bolivia).—Bangs, Proc. Biol. Soc. Washington, XII, 1898, 137 ("Santa Marta," Colombia).—Allen, Bull. Am. Mus. Nat. Hist., XIII, 1900, 143 (Bonda, Santa Marta, and Cacagualito, Colombia); XXI, 1905, 282 (Bonda, Colombia; descr. nest and eggs).

Pyrocephalus erythrocercus Gray, Hand-List Birds, I, 1869, 362 (in list of species; range).

Pyrocephalus tyrannulus Gray, Hand-List Birds, I, 1869, 363 (in list of species; range).

Myiarchus crinitus var. *irritabilis* (not *Tyrannus irritabilis* Vieillot) Coues, Proc. Acad. Nat. Sci. Philadelphia, 1872, 65, part (diag.; Paraguay and Parana; crit.).—Baird, Brewer, and Ridgway, Hist. N. Am. Birds, II, 1874, 331, part (diag.; range).

Myiarchus erythrocercus var. *erythrocercus* Ridgway, Proc. U. S. Nat. Mus., I, 1878, 140 (range; meas.; crit.).

Myiarchus tyrannulus chlorepiscius von Berlepsch and Leverkühn, Ornis, VI, 1890, 16 (San Miguel and Cuyabá, Brazil; orig. descr.; type in coll. Kiel Mus.).—von Ihering, Aves do Brazil, 1907, 293 (ref. orig. descr.).—von Berlepsch, Ornis, XIV, 1907, 476 (in list of species).—Hellmayr, Nov. Zool., XV, 1908, 53, in text (crit.).—Hartert and Venturi, Nov. Zool., XVI, 1909, 203 (Oran, Tucumán, and Mocovi, Argentina; descr. nest and eggs).—Bangs and Noble, Auk, XXXV, 1918, 455 (Bellavista, Peru).—Chapman, Bull. U. S. Nat. Mus., No. 117, 1921, 98 (Santa Ana, Peru).

Myiarchus brevipennis Hartert, Bull. Brit. Orn. Club, I, 1892, 12 (Aruba, Curaçao, and Bonaire, Dutch West Indies; orig. descr.; type in coll. Tring Mus.).—Hartert, Ibis, 1893, 298 (Aruba; crit.), 318 (Savonet, Curaçao), 328 (Bonaire).—Sharpe, Hand-List Birds, III, 1901, 145 (ref. orig. descr.; range).—Hartert, Nov. Zool., IX, 1902, 300 (range; crit.).—Ridgway, Bull. U. S. Nat. Mus., No. 50, IV, 1907, 610, 620 (diag.; range; references).—Lowe, Ibis, 1909, 318, in text (crit.).—Brabourne and Chubb, Birds S. Am., I, 1912, 302 (ref. orig. descr.; range).

Myiarchus oberi (not of Lawrence) Sharpe, Hand-List Birds, III, 1901, 145, part (Tobago and Margarita Is.).—Brabourne and Chubb, Birds S. Am., I, 1912, 302 (ref. orig. descr.; range).

Myiarchus chlorepiscius Sharpe, Hand-List Birds, III, 1901, 145 (ref. orig. descr.; range).—Brabourne and Chubb, Birds S. Am., I, 1912, 302 (ref. orig. descr.; range).

[*Myiarchus*] *tyrannulus.* Var. *chlorepiscius* Dubois, Syn. Avium, I, 1902, 250 (ref. orig. descr.; range).

[*Myiarchus*] *tyrannulus.* Var. *brevipennis* Dubois, Syn. Avium, I, 1902, 250 (ref. orig. descr.; range).

Miyarchus tyrannus (lapsi) Gœldi, Bol. Mus. Paraense, III, 1902, 293 (Sarayácu, Ecuador, ex Sclater).

Myiarchus tyrannulus tyrannulus Clark, Proc. Boston Soc. Nat. Hist., XXXII, 1905, 276 (Colombia; Margarita I., Venezuela; crit.).— Hellmayr, Nov. Zool., XIII, 1906, 26 (Chaguaramas and Laventille, Trinidad; Tobago; Cumaná and Orinoco River, Venezuela).—Cherrie, Mus. Brooklyn Inst. Sci. Bull., I, 1908, 364 (Pointe Gourde, Trinidad); II, 1916, 243 (Las Barrancas, Ciudad Bolivar, and Caicara, Venezuela; descr. nest and eggs).—Chapman, Bull. Am. Mus. Nat. Hist., XXXVI, 1917, 474 (La Playa, Colombia).—Beebe, Zoologica, II, 1919, 232 (Bartica District, British Guiana).—Todd and Carriker, Ann. Carnegie Mus., XIV, 1922, 347 (Santa Marta region, Colombia; references; crit.; habits).

Myiarchus mexicanus chlorepiscius von Berlepsch and Stolzmann, Ornis, XIII, 1905, 89 (Santa Ana, Peru; crit.).

Myiarchus tyrannulus brevipennis Hellmayr, Nov. Zool., XIII, 1906, 26, in text (crit.).—von Berlepsch, Ornis, XIV, 1907, 476 (in list of species).—Cory, Field Mus. Orn. Series, I, 1909, 200 (Aruba), 207 (Curaçao), 212 (Bonaire), 216 (Los Roques I.), 225 (Blanquilla I., ex Lowe).

(?)*Myiarchus oberi nugator?* Ridgway, Bull. U. S. Nat. Mus., No. 50, IV, 1907, 619 (Tobago; crit.).

(?)*Myiarchus tyrannulus tobagensis* Hellmayr, Verh. Orn. Ges. Bayern, XII, 1914, 89 (Man-of-War Bay, Tobago; orig. descr.; type in coll. Munich Mus.).

Description.—Above deep grayish olive, the pileum more or less shaded with brownish olive; wings dusky, the primaries with narrow external edgings of argus brown, and the secondaries similarly margined with dull white or cream color, the margins becoming wider on the tertiaries, and all the remiges with buffy inner margins; greater and middle wing-coverts narrowly edged and broadly tipped with dull whitish or deep olive buff, forming two bands across the wing; upper tail-coverts buffy brown or dull olive brown, with more or less conspicuous margins of argus brown; tail dusky, with indistinct paler brown tip and narrow pale outer margins to the outer rectrices; all the rectrices except the central pair with the inner webs largely cinnamon brown; throat pallid neutral gray, deepening into light gull gray on the breast, and passing into naphthalene yellow on the abdomen and crissum, the sides and flanks shaded with greenish; under wing-coverts naphthalene yellow; "iris brown; feet and bill black."

In juvenal dress the upper parts are dull grayish brown, the rectrices (including the middle pair) are more or less cinnamon on both webs, the secondary edgings are largely rufescent, the wing-coverts are tipped with buffy or rufescent, and the under parts from the breast down are almost white, with only a faint yellow tinge.

MEASUREMENTS.

	Wing.	*Tail.*	*Bill.*	*Tarsus.*
Five males from Colombia	(93–95)94	(84–87)85	(18.5–20)19.3	(21.5–24.5)22.5
Five males from Venezuela	(95–99)97	(89–94)90	(19.5–20.5)20.2	(22.5–24)23
Five males from Curaçao	(91–95)93.5	(81–85)84	(20–21)20.4	(22–23)22.4
Five males from French Guiana	(91–94)92	(80–82)81	(18–20)19	(21–23)21.8
Five males from Matto Grosso and Paraguay	(92–99)95	(83–90.5)87	(19.5–21)20	(20.5–23)21.8
Five males from Bolivia	(93–101)98	(87–92)89.5	(19.5–21.5)20.3	(21–23)22.2
Five males from Argentina	(97–100)98	(90–92)91	(19–21)20	(21.5–23)22.3
Five females from Colombia	(87–90)89	(81–85)83	(18.5–20)19.2	(20–22.5)21.5
Five females from Venezuela and Trinidad	(89–92)90.5	(82–88)84	(18.5–20.5)19.8	(20.5–24)22.4
Two females from Curaçao	(89–91)90	(84–85)84.5	(19.5–20)19.7	(22–22.5)22.3
Five females from French Guiana	(86–89)88	(76–80)78	(18.5–19)18.7	(20.5–22)21.3
Five females from Matto Grosso and Paraguay	(89–94)91.5	(82–87)84.6	(18.5–20)19.4	(21.5–23)22.1
Five females from Bolivia	(92–98)94.5	(82–90)87	(19–20)19.4	(21–22.5)21.8
Four females from Argentina	(90–99)94	(82–87)85	(18.5–19.5)19.1	(20–21.5)21

Range.—From Central Argentina northward through Paraguay, western Matto Grosso, Bolivia, Peru, and Ecuador (east of the Andes), to Venezuela (including the Dutch West Indies), thence eastward to Guiana, and westward to northern Colombia.

Remarks.—The above description is based on specimens in fairly fresh plumage and average condition. A great deal of variation obtains in the series examined—more than suffices in other species of *Myiarchus* to discriminate racial differences, but it is individual and seasonal, certainly not geographical. In worn plumage the upper parts fade out to brownish, while in perfectly fresh dress there is often an olivaceous cast to the feathers above, and the yellow below is purer. A bird from Colombia (No. 38,829, Collection Carnegie Museum) is very pale above (citrine drab), while another from Argentina (No. 141,744, Collection American Museum of Natural History) is unusually dark (near dark olive), and between these extremes there is every possible degree of variation. We note, too, that the age of the specimens themselves has considerable to do with their shade of color. A series from Matto Grosso, Brazil, collected by Herbert H. Smith in 1885–86, are markedly duller and paler than specimens in comparable condition secured in the same general region in more recent years, and the same is true of the series from the Santa Marta region collected by Mr. W. W. Brown in 1898-99 as compared with Mr. M. A. Carriker, Jr.'s later material from the same place. Consequently care must be exercised in comparing such specimens.

Eliminating young and worn specimens, therefore, and using only such as are in fact comparable, we can find no sufficient ground for separating a series from the Caribbean coast region of Colombia from another from

Venezuela and French Guiana. Specimens from the latter country are topotypical, and average a little smaller than usual, while those from Venezuela are a little larger, but the difference is not excessive. Birds from the Dutch West Indies have been separated by Dr. Hartert on the ground of smaller size and generally paler color above. As shown by the above table of measurements, examples from Curaçao are actually larger than those from the type-locality, while we can not verify the alleged color-differences after a careful study of our series. Two birds from Tobago are not distinguishable in any way either, so far as we can see. Comparing now these northern birds, considered collectively, with a good series from Brazil (Matto Grosso), Bolivia, and Argentina, we fail to distinguish the latter by any constant characters. The form *chlorepiscius* was based on just three specimens from Matto Grosso, but the characters assigned are of absolutely no diagnostic value in view of the large amount of variation obtaining in this species. At first glance it would seem as if southern birds had rather more cinnamon rufous in the tail than northern, but further study shows that this feature is inconstant, and varies in all parts of the range. There are specimens from Colombia, Venezuela, Guiana, and Brazil which have very little cinnamon rufous in the tail, thus approaching the race *bahiæ*. In the series from Matto Grosso there is a perfect gradation from specimens having a broad inner rufous margin to the outer rectrices to those showing none at all, and which could be referred to *bahiæ* just as well as not. Allen has already remarked on this variation, but it must be added that some of the specimens on which he based his remarks turn out to be *pelzelni*. Taking everything into consideration, therefore, we can not discover any good reasons for recognizing any geographical races of this species except *bahiæ* and *pallescens*, since the slightly larger size of more southern birds is such a small matter. The present form has a rather peculiar range, not passing beyond the Andes anywhere except in the Caribbean coast district of Colombia, but apparently extending southward along the east base of the Andes into Peru, Bolivia, and Argentina, leaving the greater part of Brazil to be occupied by the race *bahiæ*, with which it intergrades in Matto Grosso. Light and dark birds occur throughout this extensive range, and have no geographical significance.

Myiarchus tyrannulus has had an eventful nomenclatural history. It was described by Brisson in 1760 and independently figured by D'Aubenton a few years later, the figure serving as the basis for Müller's name, applied in 1776, and for Boddaert's in 1783. Latham and Gmelin considered it as a "variety" of what is now known as *Myiarchus ferox*. Vieillot described it under still another name. D'Orbigny and Lafresnaye confused it with the North American *M. crinitus*, and Coues made it a variety of that form. Cassin was the first to point out the priority of Müller's name in 1864, but it was misapplied until revived by Sclater in 1888, the species having in the meantime been again christened by Sclater in 1868 as *erythrocercus*. We have already discussed the status of the supposed subspecies *chlorepiscius*, *brevipennis*, and *tobagensis*.

Specimens examined.—Colombia: Bonda, 5; Cautilito, 1: Mamatoco, 5; La Tigrera, 4; Fundacion, 6; Rio Hacha, 3; Turbaco, 4; Palmar, 4; "Santa

Marta Mts.," 21; San Francisco, 1; La Playa, 1. Dutch West Indies: St. Patrick, Curaçao, 1; Savonet, Curaçao, 8. Venezuela: Ciudad Bolivar, 8; Agua Salada de Ciudad Bolivar, 5; Maripa, 6; El Llagual, 6; San Felix, 2; El Callao, 2; San German de Upata, 1; San Esteban, 1; Aroa, 1; Tocuyo, 2; El Trompillo, 6; Sierra de Carabobo, 1; Margarita Island, 7; Puerto Cabello, 1; El Cuji, Lara, 2; Tucacas, Falcon, 3; Cristobal Colon, Paria Peninsula, 4; Cumanacoa, 1; San Antonio, 3; Cumaná, 1; Las Barrancas, 1; Caicara, 9; Maipures, 1. Trinidad: Carenage, 1; Pointe Gourde, 1; Princestown, 1. Tobago, 2. British Guiana: Annai, 2; unspecified, 1. Dutch Guiana: Coast near Diana Creek, 4. French Guiana: Cayenne, 1; Mana, 10. Peru: Bellavista, 1; Santa Ana, Urubamba Valley, 1. Bolivia: Puerto Suarez, 1; Rio Parapeti, 1; Yacuiba, 6; Rio Dolores, 5; Rio Surutu, 1; Palmarito, 1; Buenavista, 1; Rio Grande, Prov. Santa Cruz, 1; Mission San Antonio, Rio Chimore, Prov. Cochabamba, 1; Todos Santos, Prov. Cochabamba, 2; Chilon, Prov. Santa Cruz, 1; Vermejo, Prov. Santa Cruz, 1. Brazil: Chapada, Matto Grosso, 24; Urucum, Matto Grosso, 7; Belvedere de Urucum, 1. Paraguay: Fort Wheeler, Paraguayan Chaco, 2; Rio Negro, 3; Puerto Pinasco, 2; unspecified (Parana River), 2. Argentina: Rio Bermejo, 5; Miraflores, 1; Embarcacion, 2; Concepcion, Tucumán, 1; Timoca, Tucumán, 1; Tafi Viejo, Tucumán, 3; Salta, Oran, 1; Las Palmas, Chaco, 2; Ocampo, Chaco, 3; Chaco de Salta, 1; Mocovi, Chaco Santa Fé, 1; Tapia, Tucumán, 1; Tafi Trail, Tucumán, 6. Total, 254.

Myiarchus tyrannulus bahiæ von Berlepsch and Leverkühn..

Muscicapa ferox (not of Gmelin) Wied, Beiträge Naturg. Bras., III, 1831, 855 (Rio [Janeiro], Cabo Frio, and Campos dos Goaytacases, Brazil; descr.).

Myiarchus ferox Burmeister, Syst. Ueber. Thiere Bras., II, 1856, 470, part (Brazil; descr. male).—von Pelzeln, Orn. Bras., ii, 1869, 116, part (localities in Brazil; crit.).—(?)Reinhardt, Vidensk. Med. Nat. For. Kjobenhavn, 1870, 141, part (Lagoa Santa, Brazil; crit.).

(?)*Myiarchus crinitus* var. *irritabilis* (not *Tyrannus irritabilis* Vieillot) Coues, Proc. Acad. Nat. Sci. Philadelphia, 1872, 65, part (Bahia, Brazil).

Myiarchus nigriceps (not of Sclater) Allen, Bull. Essex Inst., VIII, 1876, 79 (Santarem, Brazil).

Myiarchus tyrannulus (not *Muscicapa tyrannulus* Müller) Sclater, Cat. Birds Brit. Mus., XIV, 1888, 251, part (Bahia, Brazil).—(?)Tristram, Cat. Coll. Birds, 1889, 124 (Brazil).—Riker and Chapman, Auk, VII, 1890, 270 (Santarem, Brazil).—Kœnigswald, Journ. f. Orn., XLIV, 1896, 360 (São Paulo, Brazil).—von Ihering, Rev. Mus. Paulista, III, 1898, 204, excl. extralimital localities, part, and V, 1902, 314 (São Paulo, Brazil).—Hagmann, Bol. Mus. Gœldi, IV, 1904, 46, part (Burmeister's reference), 89 (von Pelzeln's reference).—von Ihering, Aves do Brazil, 1907, 293, part (localities in southern Brazil).—Snethlage, Bol. Mus. Gœldi, VIII, 1914, 388 (Monte Alegre, Brazil; diag.).

Myiarchus bahiæ von Berlepsch and Leverkühn, Ornis, VI, 1890, 17, in text (Bahia [type-locality] and Goyaz, Brazil; orig. descr.; type in coll.—?).—Brabourne and Chubb, Birds S. Am., I, 1912, 302 (ref. orig. descr.; range).

Myiarchus tyrannulus bahiæ von Ihering, Aves do Brazil, 1907, 294 (Bahia, Brazil).—von Berlepsch, Ornis, XIV, 1907, 476 (in list of species).—Hellmayr, Nov. Zool., XV, 1908, 53 (Goyaz and Rio Araguaya, Brazil; meas.; crit.).—Hellmayr, Abhand. K. Bayerischen Akad. Wiss., Math.-phys. Kl., XXVI, 1912, 90 (Rio Muriá, Brazil, ex Natterer; crit.).—von Ihering, Rev. Mus. Paulista, IX, 1914, 442 (Joazeiro, Brazil; descr. eggs).

Subspecific characters.—Similar to *Myiarchus tyrannulus tyrannulus*, but cinnamon rufous area on tail not sharply defined from the dusky, and almost or quite wanting on the two outermost feathers on each side.

Measurements.—Male: wing, 92–99 (average, 95); tail, 83–91 (86); bill, 19.5–21.5 (20.5); tarsus, 21.5–24 (23). Female (five specimens): wing, 92–97 (93); tail, 84–87 (85); bill, 18.5–20.5 (20); tarsus, 20.5–23 (21).

Range.—Brazil, from the lower Amazon Valley to São Paulo (except the Ceará region).

Remarks.—It would seem as if von Berlepsch and Leverkühn did not place much faith in their new form, since they failed to describe it formally. It is a perfectly good race, however, quite distinct from the typical form, having a differently colored tail. As a rule the outer pair of rectrices, and often also the next pair, are without rufous, but sometimes there is a narrow edging of this color on the inner web of the feathers. Birds of this type are occasional anywhere in the range of *tyrannulus*, but in central and eastern Brazil they are found to the exclusion of the other (so far as known). With an unusually fine series at our command we can discover no other characters for the separation of *bahiæ*, which should undoubtedly stand as a subspecies of *tyrannulus*.

Specimens examined.—Brazil: Santarem, 20; Itaituba, 1; Apacy, 1; Obidos, 8; Serra de Euré, 2; Serra de Paituna, 1; Monte Alegre, 2; Cametá, Rio Tocantins, 1; Bahia, 1; Itarare, São Paulo, 1; Victoria, São Paulo, 2; Bebedouro, São Paulo, 1; Itapura, São Paulo, 1. Total, 42.

Myiarchus tyrannulus pallescens Cory.

Myiarchus tyrannulus pallescens Cory, Field Mus. Orn. Series, I, 1916, 343 (Jua, Ceará, Brazil; orig. descr.; type in coll. Field Mus.).

Subspecific characters.—Similar to *Myiarchus tyrannulus tyrannulus*, but coloration in general paler, and upper parts more greenish.

Measurements.—Male (two specimens): wing, 94–95; tail, 86–87; bill, 19–20; tarsus, 21–22.

Range.—Known only from the type-locality, in extreme northeastern Brazil.

Remarks.—In view of the extent of the area over which *bahiæ* ranges without varying it is surprising to find a different form inhabiting a comparatively restricted area in extreme northeastern Brazil. Although only two specimens have been examined in this connection, they apparently represent a valid race. The throat and breast are a shade paler gray (pallid neutral gray) than in *bahiæ*, and the upper parts are obviously paler and more greenish (near citrine drab), with the pileum decidedly brownish.

There is also more cinnamon rufous on the rectrices than in *bahiæ*, this especially obvious on the outer pair basally. The yellow of the posterior under parts is about the same.

Specimens examined.—Brazil: Jua, Ceará, 2.

Myiarchus pelzelni von Berlepsch.

Myiarchus tyrannulus (not *Muscicapa tyrannulus* Müller) Coues, Proc. Acad. Nat. Sci. Philadelphia, 1872, 71, part (Bahia, Brazil).— Barrows, Bull. Nuttall Orn. Club, VIII, 1883, 202 (Concepcion, Uruguay).

Myiarchus pelzelni von Berlepsch, Ibis, 1883, 139 (Bahia, Brazil; orig. descr.; type in coll. H. von Berlepsch).—Reichenow and Schalow, Journ. f. Orn., XXXIV, 1886, 87 (reprint orig. descr.).—Sclater, Cat. Birds Brit. Mus., XIV, 1888, 125 (Bahia, Brazil, and Oyapoc, French Guiana; descr.; crit.).—von Berlepsch and Leverkühn, Ornis, VI, 1890, 17 (Pontinho and Bahia, Brazil; crit.).—Sharpe, Hand-List Birds, III, 1901, 145 (in list of species; range).—Oberholser, Proc. U. S. Nat. Mus., XXV, 1903, 135, in text (crit.).—von Berlepsch and Stolzmann, Ornis, XIII, 1905, 89 (Santa Ana, Peru; meas.; crit.).—Nicoll, Ibis, 1906, 668 (Itaparica I., Brazil; habits; crit.).—von Ihering, Aves do Brazil, 1907, 294 (Bahia, Brazil).—Ridgway, Bull. U. S. Nat. Mus., No. 50, IV, 1907, 612 (diag.; references).—von Berlepsch, Ornis, XIV, 1907, 477 (in list of species).—von Berlepsch, Nov. Zool., XV, 1908, 128 (Oyapoc, French Guiana, ex Sclater).—Penard, Vogels Guyana, II, 1910, 261 (Cayenne, French Guiana).—Brabourne and Chubb, Birds S. Am., I, 1912, 303 (ref. orig. descr.; range).—Hellmayr, Abhand K. Bayerischen Akad. Wiss., Math.-phys. Kl., XXVI, 1912, 110, 120 (Fazenda Nazareth, Mexiana I., Brazil; range; meas.; crit.).—Snethlage, Bol. Mus. Gœldi, VIII, 1914, 389 (Boim, S. Natal, and Mexiana I., Brazil; diag.).—Chapman, Bull. U. S. Nat. Mus., No. 117, 1921, 99 (von Berlepsch and Stolzmann's record).

Myiarchus ferocior Cabanis, Journ. f. Orn., XXXI, 1883, 214 (Tucumán, Argentina; orig. descr.; type in coll. Berlin Mus.).—Reichenow and Schalow, Journ. f. Orn., XXXIV, 1886, 87 (reprint orig. descr.).

Myiarchus ferox (not *Muscicapa ferox* Gmelin) Allen, Bull. Am. Mus. Nat. Hist., IV, 1892, 346, part (Chapada, Matto Grosso, Brazil; crit.).—Nicoll, Ibis, 1904, 40, part (Bahia, Brazil).—Dabbene, An. Mus. Nac. Buenos Aires, (3), XI, 1910, 348, part (range).

Myiarchus swainsoni var. *pelzelni* Dubois, Syn. Avium, I, 1902, 251 (ref. orig. descr.; range).

Myiarchus ferox ferocior Hartert and Venturi, Nov. Zool., XVI, 1909, 203 (Barracas al Sud and Ocampo, Argentina; crit.; descr. eggs).

Myiarchus fortirostris Todd, Proc. Biol. Soc. Washington, XXVI, 1913, 171 ("Provence del Sara" [i. e., Buenavista], Bolivia; orig. descr.; type in coll. Carnegie Mus.).—Chapman, Bull. Am. Mus. Nat. Hist., XXXVI, 1917, 475 (Florencia, Colombia, and east Peru; crit.).

Myiarchus cephalotes (not of Taczanowski) Chapman, Bull. U. S. Nat. Mus., No. 117, 1921, 98, part (Chauillay, Urubamba Cañon, Peru).

Description.—Above Saccardo's olive, the pileum more brownish, the sides of the head deeper brown, in more or less abrupt contrast; wings dusky brown, the middle and lesser coverts margined and tipped with olive buff, the inner primaries and secondaries margined externally with cartridge buff, in gradually increasing amount; inner webs of remiges margined with pale buffy; upper tail-coverts Saccardo's umber; tail dusky brown, with indistinct paler tip and edgings; throat and breast pallid neutral gray; rest of under parts sulphur yellow (including under wing-coverts); "iris brown; feet black; bill brown above, paler brown below."

MEASUREMENTS.

	Wing.	*Tail.*	*Bill.*	*Tarsus.*
Two males from Brazil	(87–92)89.5	(78–80)79	(17–17.5)17.3	(20–20.5)20.3
One male from Bolivia	100	88	17	22
Seven males from Argentina	(97–103)99	(86–92)89.5	(17.5–19)18.3	(21–22.5)21.7
Five females from Brazil	(84–88)86	(75–87)80	(16–17.5)16.5	(19–21.5)20
Four females from Bolivia	(92–94)93	(81–82)81.5	17.5	(20.5–21.5)21
One female from Argentina	96	85	17	22

Range.—From Guiana south to Buenos Aires, Argentina, and west to the Andes.

Remarks.—Immaturity is indicated in specimens with rusty cinnamon edgings to the remiges and rectrices, and buffy under tail-coverts. Entirely aside from this, however, and from the effects of wear, there is much variation, affecting the general coloration and the size and shape of the bill. In some examples, notably the type-specimen of *Myiarchus "fortirostris,"* this member is shorter, stouter, and relatively higher, with the culmen more rounded and the tip less strongly hooked than is usually the case in *Myiarchus*. Normally the upper parts in fresh plumage are as described, Saccardo's olive, but occasionally they incline to grayish—in one specimen (No. 284,412, U. S. National Museum, Victorica, Argentina) being almost mouse gray. The yellow of the under parts is sometimes very pale or barely indicated, and sometimes tinged with dull greenish. Wear and fading produce marked changes in color also.

How many of the earlier *Myiarchus* records for South America east of the Andes may pertain to the present form it is impossible to say, but it is likely that a species with such a wide range must occasionally have fallen under the eye of ornithologists. At any rate, Coues in 1872, with a specimen before him, failed to recognize it, and it was not until 1883 that von Berlepsch pointed out its distinctive characters. His description appeared in the Ibis for April of that year, while in the Journal für Ornithologie of ostensibly even date Cabanis described a new species of the same group under the name *Myiarchus ferocior*. We find, however, in the issue of the latter journal a reference to the receipt of the April number of the Ibis, which would give von Berlepsch's name a slight priority. By most authors, however, *ferocior* has been either ignored or misapplied, and while Messrs. Hartert and Venturi have apparently placed it correctly on the form to which it belongs, they make the mistake of considering it a subspecies of

ferox, with which it has clearly nothing to do, being in fact merely a slightly larger race of *pelzelni*, very doubtfully worthy of formal recognition. Again in 1913, with only a single specimen of rather unusual character before him, the present writer was misled into perpetrating another synonym for the same bird, comparing it with specimens of *Myiarchus ferox swainsoni* from Paraguay which had been erroneously determined. In order to settle the status of *fortirostris* beyond question, topotypical specimens were recently sent to Mr. C. E. Hellmayr for comparison with Cabanis' type of *ferocior*, and he reports that they are the same.

While it is true that Argentine specimens are larger than those from northern Brazil, there appears to be no difference in color. No sexed specimens in good condition from Bahia, the type-locality, are available at this writing, but taking the series as a whole the propriety of recognizing two forms, based wholly on difference in size, is questionable, and we prefer to refer them to a single variable species, easily recognized by its generally paler, more uniform coloration as compared with any of the forms of *ferox*, as well as by its different proportions. In *ferox* the wing is but little longer (occasionally even shorter) than the tail, with a very short tip, and short outermost primary, always decidedly shorter than the fourth. In *pelzelni* the wing is relatively longer, approximately one-tenth more than the tail, with a longer tip, and longer outermost primary, exceeding the fourth or but little less. The bill, too, averages smaller and paler, more brownish, in color. In all these characters of form and proportion the species agrees with *M. sordidus* and *M. phæonotus*, these three comprising a group by themselves within the genus.

Habits.—Myiarchus pelzelni is preeminently a species of the campos region, instead of the deep forest. Mr. M. J. Nicoll, who met with it on Itaparica Island, near Bahia, says that it "was found singly or in pairs among the clumps of mango-trees which grow in abundance in the open glades of the forest. At a distance it is easily mistaken for *M. ferox*." Prof. Barrows intimates that in Uruguay it is a migratory species; he speaks of finding a "loose nest of hair, feathers, etc., in a hollow stub five feet from the ground. It contained three eggs which in color and markings were precisely like those of *M. crinitus*, but a little smaller." A similar description is given by M. Venturi.

Specimens examined.—Colombia: Florencia, Caqueta, 1. Peru: Chauillay, Urubamba Cañon, 1; unspecified, 1. Bolivia: Buenavista, 2; Cercado de Santa Cruz, 1; Rio Surutu, 3; Rio Dolores, 1; Todos Santos, 1; Trinidad, Rio Mamoré, 1. Argentina: Miraflores, 1; Rio Bermejo, Chaco Central, 1; Ocampo, 1; Barracas al Sur, 1; Formosa, 2; Las Talas, 1; Concepcion, Tucumán, 1; Victorica, 2. Uruguay: Concepcion, 3. Brazil: Chapada, Matto Grosso, 9; Tapirapoan, Matto Grosso, 1; Urucum, Matto Grosso, 1; Bahia, 5; Santa Maria, Mexiana I., 1; Cachoeira, Rio Purús, 1. Total, 43.

Myiarchus sordidus Todd.

Myiarchus sordidus Todd, Proc. Biol. Soc. Washington, XXIX, 1916, 96 (El Trompillo, Carabobo, Venezuela; orig. descr.; type in coll. Carnegie Mus.).

Myiarchus ferox venezuelensis (not of Lawrence) Cherrie, Mus. Brooklyn Inst. Sci. Bull., II, 1916, 244, part (Ciudad Bolivar, Venezuela).

Description.—Above dark olive; pileum subcrested, with darker centers to the feathers; upper tail-coverts tinged with rusty; auricular region tinged with brownish; wings brown, with slight paler outer edgings, more prominent and whitish on the inner secondaries, the middle and greater coverts edged and tipped with grayish brown, forming two indistinct wing-bands; tail deep brown, the rectrices with obscure external edgings of rusty brown, the outermost pair with narrow buffy white external margins; throat and breast pale neutral gray; abdomen and under tail and wing-coverts primrose yellow, much tinged with olivaceous laterally and anteriorly; tibiæ dull brown; bill above brown (in skin), paler below; feet black; "iris seal brown" (Cherrie).

Measurements.—Female (four specimens): wing, 88–90 (average, 89); tail, 81–84 (82.5); bill, 16–18 (16.8); tarsus, 19.5–20 (19.7). (No adult males seen).

Range.—Northern Venezuela and Guiana, south to Rio Grande do Sul, southern Brazil.

Remarks.—In immature dress, represented by several specimens, the crissum is washed with buffy cinnamon, and the remiges and rectrices are more or less broadly edged with rusty cinnamon, as in other species of this group. Of the series of five specimens from the type-locality, the type itself is the only fully adult bird.

This species has nothing to do with *M. ferox venezuelensis*, with which it has been carefully compared, being much paler, dingier, duller, and more greenish yellow below and under the wings; the gray of the throat and breast is not abruptly defined posteriorly, but merges gradually into the greenish yellow color and tinges it for a considerable distance, especially on the sides, giving a shaded olivaceous effect; the back is of a purer olivaceous, with the head merely a little browner, the ear-coverts the same; there is no grayish color about the eyes or lores; the bill, too, is shorter, weaker, and paler in color. Moreover, the wing-formula is entirely different, the tenth (outermost) primary being nearly equal to or even longer than the fourth, instead of decidedly shorter, while the tail is always decidedly shorter than the wing. In all its proportions *M. sordidus* thus resembles *M. pelzelni*, but differs in being very much darker colored throughout.

At the time this form was described it was supposed to be confined to a restricted area in northern Venezuela, but such proves not to be the case. Additional specimens have turned up in the collections of other institutions, not only from the Orinoco region and British Guiana, but also from the lower Amazon Valley (Santarem to Pará), and even from the States of São Paulo and Rio Grande do Sul, southern Brazil. As this extensive range embraces territory in which *M. pelzelni* is also found, they must be distinct species, although related. It is true that *pelzelni* varies considerably in color, but the specimens here referred to *sordidus* are obviously out of place in a series of that species, while agreeing fairly well among themselves. At the same time additional material from Brazil is very desirable in order to

fully establish the status of the present form, which seems to have gone unrecognized until recently, having passed for *ferox* for the most part, as shown by an inspection of the labels attached to the specimens. The soiled greenish yellow color of the posterior under parts, in connection with the proportions of the bill, wings, and tail, is a uniform characteristic of the form in question.

Specimens examined.—Venezuela: El Trompillo, Carabobo, 5; Ciudad Bolivar, 1; Agua Salada de Ciudad Bolivar, 1. British Guiana: Annai, 1. Brazil: Benevides, 1; Santarem, 1; Piassaguera, São Paulo, 1; Santa Maria River, Rio Grande do Sul, 2; Rio Negro, Parana, 1. Total, 14.

Myiarchus phæonotus Salvin and Godman.

Myiarchus phæonotus Salvin and Godman, Ibis, 1883, 207 (Merumé Mountains, British Guiana; orig. descr.; type now in coll. Brit. Mus.).—Salvin, Ibis, 1885, 298 (Mount Roraima, 3500 feet, British Guiana).—Reichenow and Schalow, Journ f. Orn., XXXIV, 1886, 87 (reprint orig. descr.).—Sclater, Cat. Birds Brit. Mus., XIV, 1888, 255 (Mount Roraima and Merumé Mountains, British Guiana; descr.; references).—Sharpe, Hand-List Birds, III, 1901, 146 (in list of species; range).—Dubois, Syn. Avium, I, 1902, 251 (ref. orig. descr.; range).—Ridgway, Bull. U. S. Nat. Mus., No. 50, IV, 1907, 612, note (crit.)—von Berlepsch, Ornis, XIV, 1907, 477 (in list of species).—Penard, Vogels Guyana, II, 1910, 261 (Guiana; descr.).—Brabourne and Chubb, Birds S. Am., I, 1912, 303 (ref. orig. descr.; range).—Chubb, Birds British Guiana, II, 1921, 229 (British Guiana references and localities; descr.).

Description.—Above between deep and dark grayish olive, passing into dusky brownish on the pileum and sides of the head; wings dusky brownish, the coverts and secondaries with paler (light grayish olive) edgings, becoming nearly white on the tertiaries; inner margins of remiges dull whitish; upper tail-coverts and tail dusky brownish; throat and fore breast pale neutral gray; rest of under surface and under wing-coverts Marguerite yellow; bill (in skin) dark brown above, paler below; feet black.

Measurements.—Male (one specimen): wing, 93; tail, 84; bill, 17.5; tarsus, 20.

Range.—Mount Roraima and Merumé Mountains, British Guiana.

Remarks.—This proves to be a very distinct form, having nothing to do with *M. ferox*, as suggested by Mr. Ridgway, but belonging in the same group as *M. pelzelni* and *M. sordidus*, having the same small bill, relatively short tail, and long outer primary. It is nearest the latter, but is decidedly darker above, and has evidently been developed on the higher elevations of British Guiana, where it was discovered by Whitely in 1881.

Specimens examined.—British Guiana: Merumé Mountains, 1.

Myiarchus ferox ferox (Gmelin).

"Tyrannus cayanensis" Brisson, Orn., II, 1760, 398 (Cayenne, French Guiana; descr.).

"Tyrant Flycatcher" Latham, Gen. Syn. Birds, II, 1782, 357 (descr.; excl. Buffon ref.).—Latham, Gen. Hist. Birds, VI, 1823, 241, excl. syn. part (descr.; references).

Muscicapa ferox Gmelin, Syst. Nat., I, 1789, 934, part (ex Brisson and Latham; diag.).—Latham, Ind. Orn., II, 1790, 485 (diag.; references [part]).—Lesson, Traité d'Orn., 1831, 382 (in list of species).

Tyrannus ferox Vieillot, Nouv. Dict. d'Hist. Nat., XXXV, 1819, 78, part (Cayenne, French Guiana; descr.).—Vieillot, Tabl. Enc. Méth., II, 1822, 848, part (French Guiana; descr.; references).

Tyrannula ferox (?)Hartlaub, Syst. Verz. Nat. Samm. Ges. [Bremen], 1844, 49, excl. syn. ("Sudamerica").—Bonaparte, Consp. Avium, I, 1850, 190, excl. syn. part (in list of species).

Myiarchus ferox von Tschudi and Cabanis, Fauna Peruana, Aves, 1846, 153 (Peru; descr.).—Cabanis, Arch. f. Naturg., 1847, 248 (in list of species).—Sclater, Cat. Am. Birds, 1862, 233, part (Pará, Brazil; references).—Sclater and Salvin, Proc. Zool. Soc. London, 1867, 578 (Mexiana I., Brazil).—von Pelzeln, Orn. Bras., ii, 1869, 116, part (Engenho do Cap. Gama, Borba, Marabitanas, Forte do Rio Branco, and Rio Muriá, Brazil; crit.).—Sclater and Salvin, Proc. Zool. Soc. London, 1873, 281 (Xeberos, Chamicuros, and Santa Cruz, Peru; descr. nest and eggs).—Sclater, Ibis, 1887, 318 (Maccasseema, British Guiana).—Sclater, Cat. Birds Brit. Mus., XIV, 1888, 253, part (records and references from eastern Peru, northern and eastern Brazil, etc.; descr.; crit.).—Riker and Chapman, Auk, VII, 1890, 270 (Santarem, Brazil).—Gœldi, Aves do Brazil, ii, 1894, 326 (Brazil; descr. nest and eggs).—Gœldi, Bol. Mus. Paraense, I, 1896, 339 (Rio Muriá, Pará, Brazil, ex Natterer), 346 (Mexiana I., Brazil, ex Wallace).—Sharpe, Hand-List Birds, III, 1901, 145, part (in list of species; range).—Dubois, Syn. Avium, I, 1902, 250, part (in list of species; range).—Gœldi, Ibis, 1905, 172 (Pará, Brazil).—Nicoll, Ibis, 1906, 668 (crit.).—von Berlepsch, Ornis, XIV, 1907, 477 (in list of species).—Snethlage, Journ. f. Orn., LVI, 1908, 503 (Goyana and I. do Papageio, Rio Tapajoz, Brazil), 528 (Arumatheua, Rio Tocantins, Brazil).—von Berlepsch, Nov. Zool., XV, 1908, 128 (Cayenne, Roche-Marie, Approuage, and Ile le Pere, French Guiana).—Snethlage, Bol. Mus. Gœldi, VI, 1909, 229 (range).—Penard, Vogels Guyana, II, 1910, 261 (Guiana; descr.).—Brabourne and Chubb, Birds S. Am., I, 1912, 302, part (ref. orig. descr.; range).—Snethlage, Bol. Mus. Gœldi, VIII, 1914, 388 (localities in lower "Amazonia"; descr.).

Myiobius ferox Gray, Gen. Birds, I, 1847, 248, excl. syn. (in list of species).

Myiarchus tyrannulus (not *Muscicapa tyrannulus* Müller) Sclater and Salvin, Nom. Avium Neotrop., 1873, 52, part (in list of species; range).—Allen, Bull. Essex Inst., VIII, 1876, 79 (Santarem, Brazil).—Forbes, Ibis, 1881, 343 (Quipapa to Garanhuns, Brazil; habits).—(?)Salvin, Cat. Strickland Coll., 1882, 314 ("S. America"; references).—Taczanowski, Proc. Zool. Soc. London, 1882, 22 (Yurimaguas, Peru).—Taczanowski, Orn. Pérou, II, 1884, 321, excl. syn. part (Yurimaguas; descr.; crit.).

Myiarchus tyrannulus var. *tyrannulus* Baird, Brewer, and Ridgway, Hist. N. Am. Birds, II, 1874, 330, part (diag.; references; range).

Myiarchus cantans (not of von Pelzeln) von Berlepsch, Ibis, 1883, 140, in text (Bahia, Brazil).

Miyarchus (lapsus) *ferox* Gœldi, Bol. Mus. Paraense, III, 1902, 293 (Amazon records, ex Sclater).

Myarchus (lapsus) *ferox* Gœldi, Album Aves Amazonicas, 1906, pl. 35, fig. 2 (lower Amazon).

Myiarchus ferox ferox Ridgway, Bull. U. S. Nat. Mus., No. 50, IV, 1907, 612 (diag.; references).—Hellmayr, Nov. Zool., XVII, 1910, 301 (Calama, Rio Madeira, Brazil; von Pelzeln's records; crit.).—Hellmayr, Abhand. K. Bayerischen Akad. Wiss., Math.-phys. Kl., XXVI, 1912, 109 (Fazenda Nazareth, Mexiana I., Brazil; crit.), 120 (Mexiana references).—Oberholser, Proc. Indiana Acad. Sci., 1918, 304 (diag.; ref. orig. descr.; meas.; range; crit.).

(?)*Myiarchus ferox insulicola* Hellmayr, Verh. Orn. Ges. Bayern, XII, 1915, 202 (Man-of-War Bay, Tobago; orig. descr.; type in coll. Munich Mus.).—Oberholser, Proc. Indiana Acad. Sci., 1918, 305 (diag.; ref. orig. descr.; crit.).

Myiarchus cephalotes (not of Taczanowski) Chapman, Bull. U. S. Nat. Mus., No. 117, 1921, 98, part (Rio San Miguel, 4500 ft., Peru).

Description.—Above dark olive, the pileum darker and more sooty, the rump rather paler; wings dusky brown, the greater and middle coverts edged and tipped with dull buffy or grayish olive, the inner primaries and the secondaries margined externally with light buff, in gradually increasing amount, and all the remiges with inner margins of dull buffy; upper tail-coverts and tail dusky brown, with paler tip and external edgings of brownish olive; sides of head neutral gray; throat and breast light neutral gray; rest of under parts and under wing-coverts sulphur yellow; "iris brown; bill and feet black."

This description is based on specimens in absolutely fresh dress. Wear affects the plumage greatly, dulling all the colors, the yellow below fading greatly. In juvenal dress the colors are all duller, and the remiges and rectrices are margined with Brussels brown.

Measurements.—Male: wing, 87–92 (average, 89); tail, 84-91 (87.5); bill, 18–20 (19); tarsus, 21–23 (22). Female: wing, 83–89 (86); tail, 82–92 (85); bill, 17.5–19 (18.5); tarsus, 21–23 (22).

Range.—French and Dutch Guiana, southern Venezuela, and Amazonian Colombia, south to eastern Peru, and east and south to Bahia, Brazil. (Tobago?).

Remarks.—Brisson gave a very full and accurate description of this form in 1760, which became the chief basis for Gmelin's name *ferox*. This name seems to have been correctly applied by most of the earlier authors, up to 1869 at least, when J. E. Gray placed it as a synonym of the *tyrannulus* of Müller—a misidentification which was unfortunately followed by Coues in 1872, and has led to much confusion since. The late Count von Berlepsch was the first to point out this mistake in 1883, while Sclater undertook to restore the proper names to both forms in 1888, and to allocate the references accordingly. Sclater, however, "lumped" all the races of this species under one name, and his treatment is thus unsatisfactory.

In this, the typical race, the general coloration averages considerably deeper than in any of the other known forms, as shown by a comparison of freshly collected specimens. Old skins are almost invariably faded, and worn specimens are not suitable for comparison either. Some British Guiana skins seem to be nearer to this form, while others are indistinguishable from *venezuelensis*. Specimens from the upper Orinoco and Amazonian Colombia are also best referred here, as well as those from Peru. Fresh Bahia skins are certainly typical *ferox*, and not *swainsoni*, which indicates the limit of the form in this direction.

Mr. Hellmayr has described the bird from Tobago as a distinct race, *insulicola*, on the ground of larger size and darker coloration. The single specimen (unsexed) we have been able to examine from this island measures: wing, 90; tail, 89; bill, 20; tarsus, 19.5. It is thus no larger than many French Guiana skins, nor is it any darker colored, allowing for its rather worn plumage. The posterior under parts, however, are much duller and paler than the average, but are approached by some Guiana specimens. The rusty color on the rectrices is significant of immaturity. The outer web of the outer rectrix, however, is markedly paler than in any specimens of *ferox* in the series consulted, and this may be a good character. It will require a series to demonstrate the validity of this supposed form, in our opinion.

Specimens examined.—French Guiana: Cayenne, 11; Mana, 27; Pied Saut, 3. Dutch Guiana: Meerzorg, 1; Parako Sarammatta, 1; Geyersvlyt, 1. British Guiana: unspecified, 1. Venezuela: Boca de Sina, Cunucunuma R., upper Orinoco, 2. Colombia: La Morelia, 2; Florencia, 1. Peru: Candamo, 1; Rio San Miguel, 1. Brazil: Benevides, 4; Santarem, 22; Colonia do Mojuy, 1; Villa Braga, 1; Apacy, 2; Obidos, 2; Islands, Obidos, 2; Avojutuba, Rio Negro, 4; Monte Alegre, 1; Conceicão, 1; Isla do Papageio, 1; Isla de Goyana, 1; Arumatheua, 2; Terra Nova, Rio Iriri, 1; St. Antonio da Cachoeira, 1; Sta. Maria, Mexiana I., 1; Mexiana I., 1; Rio Maicuru, 1; Manacapuru, 1; Forte Ambé, Rio Xingu, 1; Bom Lugar, Rio Purús, 2; Flor do Prado, 2; Bahia, 6. Total, 112.

Myiarchus ferox swainsoni Cabanis and Heine.

Tyrannus ferox (not *Muscicapa ferox* Gmelin) Swainson, Quart. Journ. Sci., XX, 1826, 276 (Brazil; descr.; crit.).—(?)D'Orbigny and Lafresnaye, Mag. de Zool., 1837, Syn. Avium, 43 (Chiquitos, Santa Cruz, and Yungas, Bolivia).—D'Orbigny, Voy. Am. Mér., Oiseaux, 1844(?), 306, excl. syn. part (Yungas, Moxos, and Santa Cruz de la Sierra, Bolivia; diag.).

Muscicapa ferox (not of Gmelin) Wied, Beitr. Nat. Bras., III, ii, 1831, 855 (descr.).

Myiarchus ferox (?)Burmeister, Syst. Ueber. Thiere Bras., II, 1856, 470, part (Brazil; descr. female; crit.).—Euler, Journ. f. Orn., XV, 1867, 228 (Cantagallo, Brazil; descr. nest and eggs).—von Pelzeln, Orn. Bras., ii, 1869, 116, part (localities in southern Brazil; crit.).—Reinhardt, Vidensk. Med. Nat. For. Kjobenhavn, 1870, 141, part (Lagoa Santa, Brazil; crit.).—Sclater, Cat. Birds Brit. Mus., XIV, 1888, 253, part (localities and references for Bolivia, southern Brazil, and Argen-

tina).—Sclater and Hudson, Argentine Orn., I, 1888, 156, excl. syn. part (Punta Lara, Mendoza, and Buenos Aires, Argentina; descr.; crit.).—Frenzel, Journ. f. Orn., XXXIX, 1891, 122 (Cordoba, Argentina).—Kerr, Ibis, 1892, 130 (Rio Pilcomayo, Argentina).—Allen, Bull. Am. Mus. Nat. Hist., IV, 1892, 346, part (Chapada, Matto Grosso, Brazil; crit.).—Holland, Ibis, 1893, 469, 487 (Estancia Sta. Helena, Media Luna, Soler-F. C. al Pacifico, Argentina; migr.; habits).—Aplin, Ibis, 1894, 180 (Santa Elena, Uruguay; habits).—Salvadori, Boll. Mus. Zool. ed Anat. comp. Torino, X, No. 208, 11 (Colonia Risso and Puerto Pagani, Paraguay).—Kerr, Bull. Brit. Orn. Club, VI, 1896, 20 (Villa Concepcion, Paraguay).—Kœnigswald, Journ. f. Orn., XLIV, 1896, 360 (São Paulo, Brazil).—Nehrkorn, Kat. Eiersammlung, 1899, 142 (descr. eggs).—von Ihering, Rev. Mus. Paulista, III, 1899, 204, excl. syn. part (S. Sebastião, S. Carlos do Pinhal, and Piquete, São Paulo, Brazil).—Euler, Rev. Mus. Paulista, IV, 1900, 51 (descr. nest and eggs).—von Ihering, Rev. Mus. Paulista, IV, 1900, 156 (Cantagallo and Nova Friburgo, Brazil), 237 (ref. descr. nest and eggs); V, 1902, 314 (São Paulo, Brazil).—(?)Lillo, An. Mus. Nac. Buenos Aires, (3), I, 1902, 187 (Tapia, Tucumán, Argentina).—Oberholser, Proc. U. S. Nat. Mus., XXV, 1903, 135 (Sapucay, Paraguay; crit.).—Oates and Reid, Cat. Birds' Eggs Brit. Mus., III, 1903, 210 (Argentina; descr. eggs).—(?)Lillo, Rev. Letras y Cien. Soc. (Tucumán), 1905, p. 17 of reprint (Tapia, Tucumán, Argentina).—von Ihering, Rev. Mus. Paulista, VI, 1904, 326 (Paraguay).—Hagmann, Bol. Mus. Gœldi, IV, 1904, 253, part (Burmeister's reference), 286, part (von Pelzeln's reference).—von Ihering, Aves do Brazil, 1907, 294, part (localities in southern Brazil).—Chubb, Ibis, 1910, 595 (Sapucay and Ybitimi, Paraguay; descr. nest).—Dabbene, An. Mus. Nac. Buenos Aires, (3), XI, 1910, 348, part (Argentine references and localities).—Grant, Ibis, 1911, 123 (Argerichi, Puerto San Juan, Desaguadero, Sapetero Cué, and Fuerto Olimpo, Paraguay; Riacho Paraguay, Rabicho, and Boca de Homiguera, Brazil; habits).

Myiarchus swainsoni Cabanis and Heine, Mus. Heineanum, II, 1859, 72 (Brazil; orig. descr.; type in coll. F. Heine; references).—Sclater, Cat. Am. Birds, 1862, 233 (Bolivia and Brazil; references).—Sclater and Salvin, Proc. Zool. Soc. London, 1869, 161 (Buenos Aires, Argentina; crit.).—Cabanis, Journ. f. Orn., XXII, 1874, 89 (Cantagallo, Brazil).—Giebel, Thes. Orn., II, 1875, 662 (ref. orig. descr.; references).—Heine and Reichenow, Nom. Mus. Heineani Orn., 1890, 146 (Brazil).—Cabanis, Journ. f. Orn., XXXI, 1883, 215, in text (crit.).—Dubois, Syn. Avium, I, 1902, 250 (references; range).

Myiarchus cantans von Pelzeln, Orn. Bras., ii, 1869, 117, 182 (Rio Janeiro, Sapitiba, Ypanema, and Curytiba [type-locality], Brazil; orig. descr.; types in coll. Vienna Mus.).—von Pelzeln, Nunquam Otiosus, II, 1872, 292 (Neu Freiburg, Brazil).—Giebel, Thes. Orn., II, 1875, 660 (ref. orig. descr.).—von Berlepsch, Ibis, 1883, 139, part (crit.).—von Berlepsch and von Ihering, Zeits. ges. Orn., 1885, 137 (Taquara do Mundo Novo, Rio Grande do Sul, Brazil; crit.).—von Berlepsch, Journ. f. Orn., XXXV, 1887, 118 (Paraguay, ex Azara?).—Stempelmann and Schulz,

Bol. Acad. Nac. Cien. Cordoba, X, 1890, 402 (Cordoba, Argentina).—Kœnigswald, Journ. f. Orn., XLIV, 1896, 360 (Estado de São Paulo, Brazil; references).

Pyrocephalus swainsoni Gray, Hand-List Birds, I, 1869, 363 (in list of species).

Pyrocephalus cantans Gray, Hand-List Birds, I, 1869, 363 (in list of species).

Myiarchus tyrannulus (not *Muscicapa tyrannulus* Müller) Coues, Proc. Acad. Nat. Sci. Philadelphia, 1872, 71, part (Brazil; crit.).—Durnford, Ibis, 1878, 61 (Punta Lara, Argentina).—Sclater and Salvin, Proc. Zool. Soc. London, 1879, 616 (Typuani and Tilotilo, Yungas, Bolivia; D'Orbigny's records).—Durnford, Ibis, 1880, 418, in text (near Tucumán, Argentina).—White, Proc. Zool. Soc. London, 1882, 608 (Oran, Salta, Argentina).

Myiarchus tyranninus (lapsus) Allen, Bull. Am. Mus. Nat. Hist., II, 1889, 87 (Mapiri, Bolivia).

Myarchus (lapsus) *ferox* Boucard and von Berlepsch, Humming Bird, II, 1892, 45 (Porto Real, Brazil).—Hagmann, Bol. Mus. Gœldi, IV, 1904, 220 (Wied's reference).

Myiarchus ferox ferocior (not *Myiarchus ferocior* Cabanis) Oberholser, Proc. Indiana Acad. Sci., 1918, 307 (diag.; range; crit.).

Myiarchus ferox swainsoni von Berlepsch, Ornis, XIV, 1907, 477 (in list of species).—Oberholser, Proc. Indiana Acad. Sci., 1918, 307 (diag.; range; crit.).

Myiarchus ferox cantans Hellmayr, Nov. Zool., XVII, 1910, 302, in text (southern Brazil; crit.).

Subspecific characters.—Similar to *Myiarchus ferox ferox*, but upper parts lighter, more brownish, and throat and breast slightly paler gray.

Measurements.—Male: wing, 87–93 (average, 90.5); tail, 82–91 (86.5); bill, 18–19.5 (18.7); tarsus, 19–22 (21). Female: wing, 83–89 (85); tail, 74–89 (81); bill, 16.5–18 (17.3); tarsus, 18–21 (20).

Range.—From central Bolivia and Goyaz, Brazil, southward to the latitude of Buenos Aires, Argentina.

Remarks.—The characters distinguishing this southern race from the typical form are precisely those separating *venezuelensis* from the latter. Upon comparison the difference between *swainsoni* and *venezuelensis* proves to be practically *nil;* they are so close that no one would think of formally separating them if their ranges were continuous each with the other, but they are in fact divided by the interposition of the dark form *ferox*, which stretches from Guiana and the lower Amazon to the eastern base of the Andes in Colombia. The only character we can find to separate *swainsoni* from *venezuelensis* is in the color of the pileum, which is slightly more brownish in the former, and more dusky in the latter, but the difference is trifling and not constant—scarcely or not obvious, indeed, except in absolutely fresh plumage. The yellow of the under parts varies considerably in tone; it is much paler and duller in worn specimens.

The early records of this form are involved in much confusion. Certain of Azara's names have been quoted as belonging here, but we think without justification. Burmeister's account is open to question, since he considered

it to be the female of the species with the tail partly rufous, and his description of the nest and eggs is certainly all wrong. Von Pelzeln was satisfied that these color-differences were not sexual, but thought they were due to age, as also did Reinhardt. Meanwhile Cabanis and Heine had described a bird from Brazil under the name *Myiarchus swainsoni*, comparing it with *M. ferox*. No definite locality is mentioned, but in view of the fact that the diagnosis fits the bird of southern Brazil as compared with typical *ferox* we may accept the name for the form under consideration, instead of *cantans* of von Pelzeln, described in 1869. We would suggest Rio Janeiro as the type-locality. Specimens from Paraguay and Argentina are precisely matched by those from Rio Janeiro and São Paulo, so that we can find no ground for distinguishing them, and even if they were separable the name *ferocior* of Cabanis would not be available, since it pertains to a bird of the *M. pelzelni* group. As in other forms of this generic group, old skins are faded as compared with freshly collected material, and this fact must be borne in mind. New specimens in fresh plumage from Bahia are referable to typical *ferox*, while similar skins from Rio Janeiro are obviously *swainsoni*, but no material from the intermediate region has been examined in this connection.

Specimens examined.—Brazil: Rio Janeiro, 2; La Raiz (foot of Organ Mts.), 2; S. Carlos do Pinhal, São Paulo, 1; Victoria, São Paulo, 1; Franca, São Paulo, 1; Itapura, São Paulo, 1; Chapada, Matto Grosso, 17; San Lorenzo River, Matto Grosso, 1; Agua Blanca de Corumbá, Matto Grosso, 1; Descalvados, Matto Grosso, 2; unspecified, 2. Argentina: Puerto Segundo, Misiones, 6; Ocampo, Chaco de Santa Fé, 1; Santa Ana, Misiones, 3; Bonpland, Misiones, 2; Aguirre, 2; Las Palmas, Chaco, 2; Resistencia, Chaco, 1; Tapia, Tucumán, 1. Paraguay: Escobar, 1; Puerto Pinasco, 1; Sapucay, 2; Puerto Bertoni, 1. Bolivia: Santa Cruz de la Sierra, 1; Buenavista 2; Palmarito, 1; Rio Quiser, 1; Rio Surutu, 1; Yungas, 1; Mapiri, 1; Tres Arroyas, Espirito Santo, 1; Todos Santos, Cochabamba, 4. Total, 67.

Myiarchus ferox venezuelensis Lawrence.

Myiarchus ferox (not *Muscicapa ferox* Gmelin) Cabanis, in Schomburgk, Reisen in Britisch-Guiana, III, 1848, 700 (British Guiana).—Cabanis and Heine, Mus. Heineanum, II, 1859, 73, excl. syn. (Venezuela).—Sclater and Salvin, Proc. Zool. Soc. London, 1868, 168 (Venezuela).—Sclater, Cat. Am. Birds, 1862, 233, part (Trinidad).—Sclater, Cat. Birds Brit. Mus., XIV, 1888, 253, part (San Esteban, Venezuela, and Trinidad).—Chubb, Birds British Guiana, II, 1921, 228 (British Guiana references and localities; descr.).

Myiarchus venezuelensis Lawrence, Proc. Acad. Nat. Sci. Philadelphia, 1865, 38 (Venezuela; orig. descr.; type in coll. Am. Mus. Nat. Hist.).—Sclater and Salvin, Proc. Zool. Soc. London, 1868, 628 (San Esteban, Venezuela),(?) 632 (Tobago; crit.).—Finsch, Proc. Zool. Soc. London, 1870, 554 (Trinidad, ex Sclater).—Allen, Bull. Am. Mus. Nat. Hist., IV, 1892, 347 (crit. on type).—Brabourne and Chubb, Birds S. Am., I, 1912, 302 (ref. orig. descr.; range).

Pyrocephalus venezuelensis Gray, Hand-List Birds, I, 1869, 363 (in list of species; range).

Myiarchus tyrannulus (not *Muscicapa tyrannulus* Müller) Coues, Proc. Acad. Nat. Sci. Philadelphia, 1872, 71, part (Venezuela; crit. on type).—Heine and Reichenow, Nom. Mus. Heineani Orn., 1890, 146 (Venezuela).—Salvin, Ibis, 1885, 298 (Bartica Grove and Camacusa, British Guiana).

Myiarchus ferox venezuelensis von Berlepsch and Hartert, Nov. Zool., IX, 1902, 51 (Altagracia, Caicara, Perico, and Ciudad Bolivar, Venezuela).—von Berlepsch, Ornis, XIV, 1907, 477 (in list of species).—Stone, Proc. Acad. Nat. Sci. Philadelphia, 1913, 205 (Boca Uracoa and Jocopita, Manimo River, Venezuela).—Cherrie, Mus. Brooklyn Inst. Sci. Bull., II, 1916, 244 (Ciudad Bolivar and Caicara, Venezuela).—Oberholser, Proc. Indiana Acad. Sci., 1918, 305 (diag.; range; crit.).

Myiarchus (ferox) venezuelensis Chapman, Bull. Am. Mus. Nat. Hist., XXXVI, 1917, 475 (Villavicencio, La Morelia, and Florencia, Colombia).

Subspecific characters.—Similar to *Myiarchus ferox ferox*, but slightly duller and paler, the upper parts dull brownish olive, the wings and tail rather paler brown, the margins also paler.

Measurements.—Male: wing, 86–93 (average, 89); tail, 84–90 (86.5); bill, 18–20.5 (19); tarsus, 20.5–23 (22). Female: wing, 84–88 (86); tail, 80–85 (83); bill, 18–20 (19); tarsus, 19–23 (21.8).

Range.—British Guiana and Venezuela, and west to the Andes in Colombia.

Remarks.—When Lawrence described his *Myiarchus venezuelensis* he had no specimens of what is now called *ferox* before him, and compared his bird with the type and other examples of *panamensis*, from which it is readily distinguishable by its deeper coloration. The rufous margins of the tail-feathers, however, to which Lawrence alludes, are merely a sign of immaturity. Coues in 1872, with the types of both forms before him, relegated both *panamensis* and *venezuelensis* to synonymy without hesitation, but with the much greater and better material now available we find that the latter is a slightly differentiated race, recognizable by the characters specified above, which hold good throughout the series when compared with *ferox*. A considerable proportion of the specimens examined have more or less conspicuous cinnamon edgings to the wings and tail, indicating immaturity. British Guiana birds are intermediate, but are perhaps best referred here, as are also specimens coming from near the eastern base of the Andes in Colombia, in the Orinoco drainage.

Specimens examined.—British Guiana: Bartica Grove, 1. Venezuela: Boca Uracoa, 1; Jocopita, 1; Maripa, 6; La Lajita, 1; Rio Mato, 3; San Felix, 1; El Callao, 2; Altagracia, 1; El Hacha, 1; Ciudad Bolivar, 2; Caicara, 4; Sacupana, 1; La Union, 1; Las Trincheras, 1; Puerto La Cruz, 1; unspecified, 2. Colombia: Villavicencio, 4. Total, 34.

Myiarchus ferox panamensis Lawrence.

Myiarchus tyrannulus (not *Muscicapa tyrannulus* Müller) Coues, Proc. Acad. Nat. Sci. Philadelphia, 1872, 71, part (Panama and New Granada;

crit.).—Sclater and Salvin, Proc. Zool. Soc. London, 1879, 515 (Retiro, Concordia, and Santa Elena, Antioquia, Colombia; descr. eggs).—Salvin and Godman, Ibis, 1880, 125 (Santa Marta, Colombia).—Oates and Reid, Cat. Birds' Eggs Brit. Mus., III, 1903, 210, pl. 5, fig. 10 (Santa Elena, Antioquia, Colombia; descr. eggs).

Myiarchus ferox (not *Muscicapa ferox* Gmelin) Sclater, Proc. Zool. Soc. London, 1855, 150 ("Bogotá," Colombia).—Cassin, Proc. Acad. Nat. Sci. Philadelphia, 1860, 143 (Rio Truando, Colombia).—Sclater, Cat. Birds Brit. Mus., XIV, 1888, 253, part (Santa Marta, Santa Elena, and "Bogotá," Colombia).—Bangs, Proc. Biol. Soc. Washington, XII, 1898, 137 ("Santa Marta," Colombia).—Allen, Bull. Am. Mus. Nat. Hist., XIII, 1900, 142 (Bonda, Colombia).

Myiarchus ferox panamensis Nelson, Proc. Biol. Soc. Washington, XVII, 1904, 29 (range).—Ridgway, Bull. U. S. Nat. Mus., No. 50, IV, 1907, 640 (Colombian localities and references; descr.; meas.).—Oberholser, Proc. Indiana Acad. Sci., 1918, 306 (range; crit.).—Todd and Carriker, Ann. Carnegie Mus., XIV, 1922, 346 (Santa Marta region, Colombia; crit.).

Myiarchus panamensis Brabourne and Chubb, Birds S. Am., I, 1912, 302 (ref. orig. descr.; range).

Myiarchus (ferox?) panamensis Chapman, Bull. Am. Mus. Nat. Hist., XXXVI, 1917, 475 (Tumaco, Bagado, Malena, Puerto Berrio, Chicoral, and Turbaco, Colombia; local range; crit.).

Subspecific characters.—Similar to *Myiarchus ferox venezuelensis,* but still lighter and paler above, the back Saccardo's olive, the pileum more or less shaded with mouse gray, and the margins of the wings and tail generally paler.

Measurements.—Male: wing, 87–94 (average, 91.5); tail, 82–91 (87); bill, 17.5–20 (19); tarsus, 22.5–25 (23.5). Female: wing, 83–95(?) (89); tail, 81–87 (86); bill, 17–20.5 (18.5); tarsus, 21–23.5 (22.5).

Range.—From Panama to northern and western Colombia, in the Tropical Zone.

Remarks.—Compared with typical *ferox* from Guiana *panamensis* is a very distinct race, easily told by its decidedly paler coloration throughout, but Venezuelan specimens are obviously intermediate. It was described by Lawrence in 1860 as a distinct species from Panama skins, but all the more recent authors (except von Berlepsch) agree in considering it a race of *ferox,* with a range extending from Panama into Colombia, where it covers the lowlands of the northern and western parts and the valleys of the Magdalena and Cauca Rivers. Colombian specimens are precisely like a series from Panama.

Specimens examined.—Colombia: Bonda, 4; Cautilito, 1; Don Diego, 1; La Tigrera, 2; Fundacion, 5; Punto Caiman, 2; Tucurinca, 2; Calamar, 1; Turbaco, 4; Lorica, 1; Gamarra, 2; Aguachica, 1; El Tambor, 1; Sautata, 1; Rio Truando, 1; "Santa Marta," 4; Puerto Berrio, 2; Bagado, 1; Malena, 1; La Herrera, 1; Tumaco, 2. Total, 40.

Myiarchus cephalotes Taczanowski.

(?)*Myiarchus ferox* (not *Muscicapa ferox* Gmelin) Tschudi, Arch. f. Naturg., 1844, 273 (Peru; excl. syn.).—Tschudi, Fauna Peruana, Aves, 1846, 153 (descr.).

Myiarchus cephalotes Taczanowski, Proc. Zool. Soc. London, 1879, 671 (Paltaypampa, Ropaybamba, and Tambillo, Peru; orig. descr.; type in coll. Warsaw Mus.; crit.; habits).—Reichenow and Schalow, Journ. f. Orn., XXVIII, 1880, 317 (reprint orig. descr.).—Taczanowski, Proc. Zool. Soc. London, 1882, 22 (Chirimoto and Tamiapampa, Peru).—Taczanowski, Orn. Pérou, II, 1884, 322 (Ropaybamba, Paltaypampa, Tambillo, Chirimoto, and Tamiapampa, Peru; descr.; references; crit.; habits).—Taczanowski and von Berlepsch, Proc. Zool. Soc. London, 1885, 93 (Machay, Ecuador).—Sclater, Cat. Birds Brit. Mus., XIV, 1888, 254 (Tamiapampa and Chirimoto, Peru; descr.; references).—von Berlepsch and Stolzmann, Proc. Zool. Soc. London, 1896, 367 (La Merced and Garita del Sol, Peru).—Sharpe, Hand-List Birds, III, 1901, 145 (in list of species; range).—Ridgway, Bull. U. S. Nat. Mus., No. 50, IV, 1907, 612, note (crit.).— von Berlepsch, Ornis, XIV, 1907, 477 (in list of species).—Brabourne and Chubb, Birds S. Am., I, 1912, 302 (ref. orig. descr.; range).—Chapman, Bull. Am. Mus. Nat. Hist., XXXVI, 1917, 476 (Cerro Munchique, Miraflores, Salento, Santa Elena, Rio Toché, El Eden, La Candela, and La Palma, Colombia; Huánuco, Peru; local range; crit.).—Bangs and Noble, Auk, XXXV, 1918, 455 (Tabaconas, Peru).—Hellmayr, Arch. f. Naturg., LXXXV, 1920, 58 (Chaquimayo, Peru; range; crit.).—Chapman, Bull. U. S. Nat. Mus., No. 117, 1921, 98, part (Prov. Huánuco, Peru).

Myiarchus swainsoni var. *cephalotes* Dubois, Syn. Avium, I, 1902, 250 (ref. orig. descr.; range).

Description.—Above deep olive, the pileum usually darker and browner, with obscure darker centers to the feathers; wings dusky brown, the middle coverts tipped and the greater coverts edged and tipped with deep olive buff; secondaries margined externally with pale chalcedony yellow, in gradually increasing amount, becoming whitish on the inner secondaries (tertiaries); upper tail-coverts and tail dusky brownish, with more or less obvious olivaceous edgings; outer web of the outer rectrix conspicuously paler, cartridge buff; sides of head neutral gray, passing into pallid neutral gray on the throat and breast; rest of under surface and under wing-coverts barium yellow; "iris dark brown; bill and feet black" (Taczanowski).

Measurements.—Male: wing, 91–95 (average, 93); tail, 88–93 (91); bill, 17.5–19 (18.5); tarsus, 20.5–22.5 (21.5). Female: wing, 86–91 (87.5); tail, 84–89 (86.5); bill, 16.5–18.5 (17.6); tarsus, 19.5–21.5 (20.7).

Range.—Subtropical Zone of the Andean region, from Colombia to Bolivia.

Remarks.—This species is easily recognizable by the conspicuously paler, buffy white outer web of the outer tail-feathers, in which respect it differs from all the other South American forms except *M. apicalis*, which, however, is otherwise very different. It was described by Taczanowski in 1879

from specimens collected at Paltaypampa and Ropaybamba by Jelski and at Tambillo by Stolzmann. These localities are in central and northern Peru respectively. A few years later it was reported from Ecuador, and more recently it has been found to be a fairly common species in the Western and Central Andes of Colombia, although not yet detected in the Eastern Andes. It has also been traced southward to Bolivia, specimens from this country being practically indistinguishable from those taken at the northern limit of its range. It is a Subtropical Zone form, not descending below 3,000 feet at the most (not below 5,000 feet, according to Stolzmann), and running up to 9,000 feet. There are two old and faded skins in the collection of the U. S. National Museum (Nos. 101,280–1) labeled "Guayaquil," but which must really have come from the mountains in the interior of Ecuador (cf. Chapman, Bulletin American Museum of Natural History, XXXIV, 1915, 377). No young birds are represented in the series examined, but one specimen shows a little rufous edging on the wings and tail—doubtless remains of the immature dress.

Habits.—Stolzmann says that *Myiarchus cephalotes* is a forest species, found in pairs or singly, and is accustomed to perch in the tops of the highest trees, whence it darts out after passing insects. It is one of the least restless of the larger flycatchers, and has a plaintive and prolonged call-note.

Specimens examined.—Colombia: El Eden, 1; Rio Toché, 1; Santa Elena, 3; La Candela, 1; Cerro Munchique, 1; Salento, 4; Miraflores, 3. Ecuador: "Guayaquil," 2. Peru: Prov. Huánuco, 1; Santo Domingo, 1; Utcuyacu, Junin, 4; Chelpes, Junin, 3; Tabaconas, 2. Bolivia: Locotal, Cochabamba, 3; Roquefalda, Cochabamba, 1; Vermejo, Santa Cruz, 2. Total, 33.

Myiarchus apicalis Sclater and Salvin.

Myiarchus apicalis Sclater and Salvin, Ibis, 1881, 269 ("Bogotá," Colombia; orig. descr.; types now in coll. Brit. Mus.).— Reichenow and Schalow, Journ. f. Orn., XXX, 1882, 217 (reprint orig. descr.).— Sclater, Cat. Birds Brit. Mus., XIV, 1888, 256 ("Bogotá," Colombia; descr.; references).—Sharpe, Hand-List Birds, III, 1901, 146 (in list of species; range).—Dubois, Syn. Avium, I, 1902, 251 (ref. orig. descr.; range).—von Berlepsch, Ornis, XIV, 1907, 477 (in list of species).— Brabourne and Chubb, Birds S. Am., I, 1912, 303 (ref. orig. descr.; range).—Chapman, Bull. Am. Mus. Nat. Hist., XXXVI, 1917, 476 (Colombian localities and range).

Description.—Above olive or deep olive, purest posteriorly, and passing into brownish dusky on the pileum; wings brownish dusky, the middle coverts tipped and the greater coverts margined and tipped with deep olive buff; inner secondaries externally margined with the same color in gradually increasing amount, becoming sea-foam yellow or whitish on the tertiaries; inner margins of remiges pale yellowish white; tail dusky black, with paler margins, the outer web of the outer rectrix and the tips of all the feathers deep olive buff, the pattern not sharply defined; sides of head grayish dusky, passing into pale olive gray on the throat (this color more strongly

washed with olive on the breast and sides of the neck), and in a more or less "streaky" fashion into baryta yellow on the rest of the under parts and the under wing-coverts; "iris brown; bill and feet black."

Measurements.—Male: wing, 89–95 (average, 92); tail, 86–93 (90); bill, 17–20.5 (19); tarsus, 20.5–23 (22). Female (five specimens): wing, 84–92 (86); tail, 80–90 (83.5); bill, 18–19 (18.5); tarsus, 20–23 (22).

Range.—Arid Tropical Zone of the upper Magdalena and upper Cauca Valleys in Colombia, reaching the valley of the upper Rio Dagua at Caldas.

Remarks.—This is a very distinct form, readily recognized by the pale tips of the rectrices. It was described in 1881 by Sclater and Salvin from "Bogotá" skins in the former's collection, but is still very imperfectly known. As shown by the researches of Messrs. Chapman and Carriker in recent years, it appears to be confined to the arid portion of the inter-Andean Tropical Zone in Colombia, occupying the upper part of the valleys of the Magdalena and Cauca Rivers. From here it has crossed over the Western Andes to the valley of the Rio Dagua, in common with several other species of similar range. Nothing is on record concerning its haunts and habits.

Specimens examined.—Colombia: Caldas, 2; Heights of Caldas, 1; Espinal, 1; Bitaco Valley, 2; Pavas, 3; Yumbo, 12; Cali, 2; San Antonio, 3; Las Lomitas, 1; El Consuelo, 1; Chicoral, 1; Honda, 2; "Bogotá," 1; La Maria, 4; Jimenez, 1. Total, 37.

Myiarchus phæocephalus Sclater.

Myiarchus phæocephalus Sclater, Proc. Zool. Soc. London, 1860, 281 (Babahoyo, Ecuador; orig. descr.; type now in coll. Brit. Mus.).—Sclater, Cat. Am. Birds, 1862, 233 (Babahoyo, Ecuador).—Lawrence, Ann. Lyc. Nat. Hist. N. Y., IX, 1869, 237 (Puna Island, Ecuador).—Coues, Proc. Acad. Nat. Sci. Philadelphia, 1872, 73 (Puna Island, Ecuador; descr.; crit.).—Sclater and Salvin, Nom. Avium Neotrop., 1873, 52 (in list of species; range).—Giebel, Thes. Orn., II, 1875, 661 (references).—Taczanowski, Proc. Zool. Soc. London, 1877, 326 (Lechugal, Peru).—von Berlepsch and Taczanowski, Proc. Zool. Soc. London, 1883, 559 (Guayaquil, Ecuador).—Taczanowski, Orn. Pérou, II, 1884, 323 (Lechugal and Tumbez, Peru; descr.; habits).—von Berlepsch and Taczanowski, Proc. Zool. Soc. London, 1885, 93 (Yaguachi, Ecuador), 122 (local range).—Sclater, Cat. Birds Brit. Mus., XIV, 1888, 255 (Babahoyo, Santa Rita, and Balzar Mountains, Ecuador; descr.; references).—Salvadori and Festa, Bol. Mus. Zool. ed Anat. Comp. Torino, XIV, No. 362, 1899, 13 (Vinces and Balzar, Ecuador; Ecuadorean references; crit.).—Sharpe, Hand-List Birds, III, 1901, 146 (in list of species; range).—Dubois, Syn. Avium, I, 1902, 251 (references; range).—von Berlepsch, Ornis, XIV, 1907, 477 (in list of species).—Brabourne and Chubb, Birds S. Am., I, 1912, 303 (ref. orig. descr.; range).—Chapman, Bull. Am. Mus. Nat. Hist., XXXVI, 1917, 476, in text (western Ecuador; crit.).

Pyrocephalus phœocephalus Gray, Hand-List Birds, I, 1869, 363 (in list of species; range).

Myiarchus tyrannulus var. *phœocephalus* Baird, Brewer, and Ridgway, Hist. N. Am. Birds, II, 1874, 330 (diag.).

Myiarchus ferox phœocephalus Ridgway, Bull. U. S. Nat. Mus., No. 50, IV, 1907, 612 (diag.; references).—Bangs and Noble, Auk, XXXV, 1918, 455 (Bellavista and Perico, Peru).—Oberholser, Proc. Indiana Acad. Sci., 1918, 306 (diag.; ref. orig. descr.; range; crit.).

Description.—Above dull deep olive with a grayish cast, and obscurely mottled with indistinct dusky centers to the feathers; pileum neutral gray, becoming blackish posteriorly from increasing dark centers to the feathers; hindneck and sides of head neutral gray; wings dusky, the lesser coverts like the back, the middle and greater coverts margined and tipped with light grayish olive; the inner primaries and the secondaries margined externally with the same color, paling into whitish or pale yellowish on the tertiaries; remiges with inner margins of pale buffy white; tail dusky brown with narrow paler outer margins and indistinct pale tip; throat and breast light neutral gray; rest of under parts Martius yellow or sulphur yellow, brightest anteriorly, the crissum and under wing-coverts paler; "iris dark brown" (Taczanowski); bill and feet blackish (in skin).

Measurements.—Male (five specimens): wing, 89–97 (average, 92.5); tail, 87–94 (90.5); bill, 19.5–22 (20.5); tarsus, 21.5–23.5 (23). Female (five specimens): wing, 83–92 (88.5); tail, 83–91 (87.5); bill, 18.5–20 (19.5); tarsus, 20–23 (21.5).

Range.—Tropical Zone of western Ecuador, reaching into extreme northwestern Peru.

Remarks.—*Myiarchus phœocephalus* was originally described from specimens collected by Fraser at Babahoyo, Ecuador, and it has since been found at sundry other localities on the Pacific slope of Ecuador and northern Peru. In its distinctly grayish pileum, centered with black, it possesses a character not shared by any other South American form of this group, and which by comparison appears to be of specific value. In the coloration of its tail an affinity to *M. apicalis* is suggested, but in any case we are unable to agree with those authors who would make it a race of *M. ferox*. It is known to range northward along the coast as far as Esmeraldas at least, while *M. ferox panamensis* occurs at Tumaco, Colombia, less than one hundred miles away, neither form showing any signs of intergradation at these extremes. According to Stolzmann it is always found in pairs, and is the only tyrant flycatcher in which he had remarked the habit of raising the tail, thus reminding one strongly of a mockingbird. It has also the habit of raising the feathers of the crest, making the head appear almost black.

Specimens examined.—Ecuador: Esmeraldas, 1; Coast of Manavi, 2; Santa Rosa, Oro, 3; Puna Island, 4; Loja, 1; Chone, Manavi, 2; Daule, Guayas, 1; Bahia, Manavi, 1; unspecified, 2. Peru: Bellavista, 2; Perico, 2; Palotillas, Piura, 3; Chilaca, Piura, 1. Total, 25.

Myiarchus atriceps Cabanis.

Myiarchus sp. Sclater and Salvin, Proc. Zool. Soc. London, 1874, 678 (Cchachupata, Peru).

Myiarchus nigriceps (not of Sclater) Taczanowski, Proc. Zool. Soc. London, 1874, 539 (Maraynioc, Paltaypampa, and Pumamarca, Peru); 1879, 235 (Tambillo, Peru).—Sclater and Salvin, Proc. Zool. Soc. London, 1879, 616 (Tilotilo, Yungas, Bolivia; crit.).—Taczanowski, Proc. Zool. Soc. London, 1880, 203 (Cutervo and Callacate, Peru); 1882, 22 (Huambo and Tamaipampa, Peru).—Taczanowski, Orn. Pérou, II, 1884, 324, excl. syn. part (Peruvian localities and references; descr.; habits).—Salvin, Nov. Zool., II, 1895, 12 (Cajabamba and Malea, Peru).

Myiarchus atriceps Cabanis, Journ. f. Orn., XXXI, 1883, 215 (St. Xavier, Tucumán, Argentina [type-locality], and Chilpes, Peru; orig. descr.; type in coll. Berlin Mus.).—Reichenow and Schalow, Journ. f. Orn., XXXIV, 1886, 86 (reprint orig. descr.).—Sclater and Hudson, Argentine Orn., I, 1888, 157 (descr.; range).—Sclater, Cat. Birds Brit. Mus., XIV, 1888, 259 (Cachupata, Peru; Tilotilo, Bolivia; Tucumán, Argentina; diag.; references [part]; crit.).—Sharpe, Hand-List Birds, III, 1901, 146 (in list of species; range).—Lillo, An. Mus. Nac. Buenos Aires, (3), I, 1902, 187 (Tapia, Tucumán, Argentina).—Lillo, Rev. Letras y Cien. Soc. (Tucumán), 1905, p. 17 of reprint (Tafi Viejo and San Javier, Tucumán, Argentina).—von Berlepsch and Stolzmann, Ornis, XIII, 1905, 113 (Huaynapata, Peru).—Hellmayr, Nov. Zool., XIII, 1906, 324, in text (crit.).—von Berlepsch, Ornis, XIV, 1907, 477 (in list of species).—Dabbene, An. Mus. Nac. Buenos Aires, (3), XI, 1910, 348 (Argentine range).—Brabourne and Chubb, Birds S. Am., I, 1912, 303 ref. orig. descr.; range).—Bangs and Noble, Auk, XXXV, 1918, 455 (Tabaconas, Peru).—Chapman, Bull. U. S. Nat. Mus., No. 117, 1921, 99 (Torontoy, Peru).

Myiarchus nigriceps. Var. *atriceps* Dubois, Syn. Avium, I, 1902, 251 (references; range).

Miyarchus [lapsus] *atriceps* Gœldi, Bol. Mus. Paraense, III, 1902, 293 (Yungas, Bolivia, ex Sclater).

Myiarchus tuberculifer atriceps Hellmayr, Arch. f. Naturg., LXXXV, 1920, 59 (Chuhuasi [7000 ft.], Peru; Jujuy, Argentina; references; crit.).

Description.—Above deep olive, with more or less of a grayish shade, especially anteriorly; pileum subcrested, black, passing into dusky gray on the sides of the head and thence into pale neutral gray on the throat and upper breast, and this into the Martius yellow of the rest of the lower surface (including the under wing-coverts); wings dusky black, the secondaries and wing-coverts with grayish brown or buffy olive outer edgings and buffy inner margins below; tail dusky, with outer margins of deep olive like the back, that on the outermost rectrix paler and more buffy; "iris brown; bill and feet black."

Measurements.—Male: wing, 86–93 (average, 90); tail, 80–91 (85); bill, 17–19.5 (18.5); tarsus, 18.5–21 (20). Female: wing, 80–87 (85); tail, 75–82 (80); bill, 17–18.5 (17.5); tarsus, 18.5–20.5 (19.5).

Range.—Andean region of Peru and western Bolivia, in the Subtropical Zone, south to Tucumán, Argentina.

Remarks.—The first specimens of this form to be collected were referred to *M. nigriceps* of Sclater, with which *M. atriceps* agrees well in color, but is an obviously larger bird, as pointed out by Cabanis in the original description. Taczanowski's records from Peru all seem to pertain to *atriceps* also, the description fitting exactly. Mr. Hellmayr has lately proposed to make *atriceps* and *tuberculifer* conspecific, but after an extended comparison of specimens we are satisfied that this arrangement does not correctly represent their real relationships. *M. atriceps* appears to be a Subtropical Zone species, probably taking the place of *tuberculifer* at the higher altitudes, with absolutely no indication of intergradation. It is very imperfectly known, however, and additional data on its habits and distribution is much to be desired.

Specimens examined.—Peru: Santo Domingo, 6; Chelpes, Junin, 5; Tabaconas, 2; Inca Mine, 1. Bolivia: Samaipata, 3; Mizque, 1. Argentina: Tafi Viejo, Tucumán, 9; Las Pavas, Tucumán, 1; San Pablo, Tucumán, 1. Total, 29.

Myiarchus tuberculifer tricolor von Pelzeln.

Myiarchus sp. Sclater and Salvin, Proc. Zool. Soc. London, 1867, 578 (Rio Tocantins, Brazil).—Gœldi, Bol. Mus. Paraense, I, 1896, 346 (Sclater and Salvin's record).

Myiarchus tricolor von Pelzeln, Orn. Bras., ii, 1869, 117, 182 (Rio Janeiro and Sapitiba, Brazil; orig. descr.; types in coll. Vienna Mus.).—von Berlepsch, Ibis, 1883, 140, in text (crit. on type).—Sclater, Cat. Birds Brit. Mus., XIV, 1888, 259 (Rio Tocantins and Bahia, Brazil; descr.; references; crit.).—Sharpe, Hand-List Birds, III, 1901, 146 (in list of species; range).—von Berlepsch and Hartert, Nov. Zool., IX, 1902, 51, part (Sapitiba and Bahia, Brazil).—Hagmann, Bol. Mus. Gœldi, IV, 1904, 89 (von Pelzeln's reference).—Snethlage, Journ. f. Orn., LVI, 1908, 503 (Itaituba, Rio Tocantins, Brazil).—Penard, Vogels Guyana, II, 1910, 262 (Guiana; descr.).—Brabourne and Chubb, Birds S. Am., I, 1912, 303 (ref. orig. descr.; range).—Snethlage, Bol. Mus. Gœldi, VIII, 1914, 389 (localities in lower "Amazonia"; descr.).

Pyrocephalus tricolor Gray, Hand-List Birds, I, 1869, 363 (in list of species; range).

Myiarchus nigriceps (not of Sclater, 1860) Sclater and Salvin, Nom. Avium Neotrop., 1873, 52, part ("Amazonia," in range).—Menegaux, Bull. Mus. d'Hist. Nat. Paris, 1904, 118 (l'Ouanary, French Guiana).—Ridgway, Bull. U. S. Nat. Mus., No. 50, IV, 1907, 613, part, 650, part (Guiana localities and records).

Miyarchus (lapsus) *tricolor* Gœldi, Bol. Mus. Paraense, III, 1902, 293 (Rio Tocantins, ex Sclater).

Myiarchus nigriceps var. *tricolor* Dubois, Syn. Avium, I, 1902, 251 (ref. orig. descr.; range).

Myiarchus tuberculifer (not *Tyrannus tuberculifer* D'Orbigny and Lafresnaye) Hellmayr, Nov. Zool., XII, 1905, 293 (Igarapé-Assu, Pará, Brazil; crit.); XIII, 1906, 323, part (crit. on type, etc.).—von Ihering, Aves do Brazil, 1907, 294, part (range).—Hellmayr, Proc. Zool. Soc.

London, 1911, 1137, in text, part (crit.).—Hellmayr, Abhand. Bayerischen Akad. Wiss., Math.-phys. Kl., XXVI, 1912, 90 (Igarapé-Assu, Pará, Brazil).—Beebe, Zoologica, II, 1916, 64, 90 (Pará, Brazil; habits).

Myiarchus tuberculifer tricolor von Berlepsch, Ornis, XIV, 1907, 477 (in list of species).

Myiarchus tuberculifer tuberculifer Hellmayr, Nov. Zool., XVII, 1910, 302 (Marmellos and Borba, Brazil).

Subspecific characters.—Similar to *Myiarchus tuberculifer tuberculifer*, but general coloration duller, the upper parts plain olive, becoming deeper (near olivaceous black No. 1 of Ridgway) on the pileum, which is therefore less strongly contrasted with the back; and gray of throat and breast deeper (pale neutral gray).

Measurements.—Male (seven specimens): wing, 79–83 (81); tail, 67–74 (71); bill, 16–18 (17); tarsus, 18–19 (18.5). Female: wing, 72–76 (74); tail, 65–70 (67); bill, 15–17 (16); tarsus, 17–19 (18).

Range.—From French Guiana southward through Brazil at least to Rio Janeiro, and westward for an indeterminate distance.

Remarks.—This form is based on specimens from Rio Janeiro, from which unfortunately no topotypical specimens are available at this writing. Mr. Hellmayr, however, has critically examined the types in the Vienna Museum, and finds them practically the same as specimens of *tuberculifer* from other parts, being merely a little smaller. He is very doubtful of the propriety of recognizing *tricolor* as a subspecies, but with the fresh material from the lower Amazon Valley now in hand we have no difficulty in separating it by the comparative characters specified above. There is one specimen in the collection of the Gœldi Museum (No. 1296) marked as agreeing with the type of *tricolor* (except for the wing-coverts being a little lighter), so that we feel fairly safe in referring the whole series examined to this form. None of those measured run as small as the types, but this may be due to the possibly more worn condition of the latter, only birds in fresh plumage having been measured in our own series. It is not at all surprising that the type-specimens fail to show the differential color-characters of the form, since these require a series in order to bring them out clearly, and the types may have faded considerably in the hundred years since they were collected. French Guiana birds vary slightly in the direction of *tuberculifer*, but are best referred here; British Guiana specimens, however, are difficult to place. The present race varies from the typical form in an opposite direction from *nigriceps*.

Specimens examined.—French Guiana: Mana, 5; Pied Saut, 2. Brazil: Oncoupi Island, 1; Benevides, 2; Santarem, 7; Colonia do Mojuy, 3; Villa Braga, 4; Itaituba, 2; Obidos, 6; Pedroira, Pará, 1; Marco da Legua, Pará, 1; Utinga, Pará, 1; "Insel im Rio Iriri," 1; Boim, Rio Tapajoz, 1; Faro, Rio Jamunda, 2; Chapeu Virado, Mosqueiro, 1. Total, 50.

Myiarchus tuberculifer tuberculifer D'Orbigny and Lafresnaye.

Tyrannus tuberculifer D'Orbigny and Lafresnaye, Mag. de Zool., 1837, Synopsis Avium, 43 (Guarayos, Bolivia; orig. descr.; type in coll. Paris

Mus.).—D'Orbigny, Voy. Am. Mér., Oiseaux, 1844, 307, pl. 32, figs. 1, 2 (Chiquitos, Moxos, and Guarayos, Bolivia; descr.).

Myiarchus tuberculifer Cabanis, Arch. f. Naturg., 1847, 248 (in list of species).—Giebel, Thes. Orn., II, 1875, 662 (references).—von Berlepsch, Ibis, 1883, 141, in text (crit.).—von Berlepsch, Journ. f. Orn., XXXII, 1884, 304 (Bucaramanga and "Bogotá," Colombia; Puerto Cabello, Venezuela; Trinidad; crit.).—Chapman, Bull. Am. Mus. Nat. Hist., VI, 1894, 43, excl. syn. part (Princestown, Trinidad; Merida, Venezuela; crit.).—Phelps, Auk, XIV, 1897, 365 (San Antonio, Bermudez, Venezuela).—Hellmayr, Nov. Zool., XIII, 1906, 26 (Caparo and Aripo, Trinidad; range [part]; crit.), 323, part (crit. on type).—von Ihering, Aves do Brazil, 1907, 294, part (range).—von Berlepsch, Ornis, XIV, 1907, 477 (in list of species).—Hellmayr, Proc. Zool. Soc. London, 1911, 1137, in text, part (range; crit.).—Brabourne and Chubb, Birds S. Am., I, 1912, 303 (ref. orig. descr.; range [part]).

Myiobius tuberculifer Gray, Gen. Birds, I, 1847, 248 (in list of species; references).

Tyrannula tuberculifer Bonaparte, Consp. Avium, I, 1850, 190 (in list of species).

Myiobius nigriceps (not *Myiarchus nigriceps* Sclater) Leotaud, Ois. Trinidad, 1866, 231 (Trinidad; descr.; habits).

Myiarchus nigriceps Sclater and Salvin, Proc. Zool. Soc. London, 1868, 168 (Caripé, Venezuela).—Wyatt, Ibis, 1871, 333 (Herradura, etc., Colombia).—Sclater and Salvin, Proc. Zool. Soc. London, 1875, 234 (Merida, Venezuela).—Salvin and Godman, Ibis, 1880, 125 (Minca, Colombia).—Heine and Reichenow, Nom. Mus. Heineani, Orn., 1890, 146 ("Bogotá," Colombia).—Salvin, Ibis, 1885, 298 (Camacusa, Merumé Mts., and Roraima [3500 ft.], British Guiana).—Sclater, Cat. Birds Brit. Mus., XIV, 1888, 258, part (Herradura, Minca, and "Bogotá," Colombia; Merida and San Esteban, Venezuela; Roraima, British Guiana; and Yquitos, Peru).—Salvin and Godman, Biol. Centr.-Am., Aves, II, 1889, 96, part (range; references).—Bangs, Proc. Biol. Soc. Washington, XII, 1898, 137 ("Santa Marta," Colombia), 158 (Pueblo Viejo, Colombia), 176 (Palomina and San Miguel, Colombia).—Allen, Bull. Am. Mus. Nat. Hist., XIII, 1900, 143 (Minca, Onaca, Las Nubes. Cacagualito, and Valparaiso, Colombia).—Sharpe, Hand-List Birds, III, 1901, 146, part (range).—Dubois, Syn. Avium, I, 1902, 251, part (range; references).—Gœldi, Bol. Mus. Paraense, III, 1902, 293 (Sarayácu, Ecuador, and Yquitos, Peru, ex Sclater).—Nelson, Proc. Biol. Soc. Washington, XVII, 1904, 49 (Colombia).—Thayer and Bangs, Bull. Mus. Comp. Zool., XLVI, 1905, 153, in text (San Miguel, Colombia).—Ridgway, Bull. U. S. Nat. Mus., No. 50, IV, 1907, 613, 650, part (descr.; range; references).—Penard, Vogels Guyana, II, 1910, 262 (Guiana; descr.).—Beebe, Zoologica, II, 1919, 232 (Bartica District, British Guiana).—Chubb, Birds British Guiana, II, 1921, 230 (British Guiana references and localities; descr.).

(?)*Myiarchus gracilirostris* von Pelzeln, Orn. Bras., ii, 117, 183 (Villa Maria, Matto Grosso, Brazil; orig. descr.; type in coll. Vienna Mus.).—

Giebel, Thes. Orn., II, 1875, 661 (ref. orig. descr.).—von Berlepsch, Ibis, 1883, 140 (crit.).

Pyrocephalus tuberculifer Gray, Hand-List Birds, I, 1869, 362 (in list of species; range).

(?)*Pyrocephalus gracilirostris* Gray, Hand-List Birds, I, 1869, 363 (in list of species; range).

Myiarchus coalei Ridgway, Proc. U. S. Nat. Mus., IX, 1886, 520 (Orinoco Valley?; orig. descr.; type in coll. U. S. Nat. Mus.).

Miyarchus (lapsus) *nigriceps* Gœldi, Bol. Mus. Paraense, III, 1902, 293 (Sarayácu and Yquitos, Peru, ex Sclater).

Myiarchus tricolor (not of von Pelzeln) von Berlepsch and Hartert, Nov. Zool., IX, 1902, 51, excl. extralimital localities and references (Quiribana de Caicara and Nericagua, Venezuela; crit.).

Myiarchus tuberculifer tuberculifer Hellmayr and von Seilern, Arch. f. Naturg., LXXVIII, 1912, 85 (Cumbre de Valencia and Las Quiguas, Venezuela; range; crit.).—Cherrie, Mus. Brooklyn Inst. Sci. Bull., II, 1916, 244 (Caicara, Quiribana de Caicara, and Nericagua, Venezuela).—Chapman, Bull. Am. Mus. Nat. Hist., XXXVI, 1917, 477 (Buena Vista and "Santa Marta," Colombia; crit.).—Bangs and Penard, Bull. Mus. Comp. Zool., LXII, 1918, 79 (Lelydorp, Dutch Guiana).—Hellmayr, Arch. f. Naturg., LXXXV, 1920, 59, in text (crit.).—Todd and Carriker, Ann. Carnegie Mus., XIV, 1922, 345 (Santa Marta region, Colombia; plum.; crit.).

Myiarchus tuberculifer nigriceps Chapman, Bull. Am. Mus. Nat. Hist., XXXVI, 1917, 477, part (Andalucia, Colombia).

Description.—Above between deep olive and citrine drab, passing into dusky black on the pileum, and into grayish on the sides of the head and neck; wings brownish black, the upper coverts broadly tipped and the secondaries externally margined with dark olive buff, becoming yellowish on the tertiaries; inner margins of remiges pale buffy; upper tail-coverts and tail deep brown, with slight olivascent or rufescent edgings; throat and breast pallid neutral gray; rest of under surface barium yellow, paler on the sides, crissum, and under wing-coverts; "iris brown; bill and feet black."

In worn plumage all the colors are paler and duller; the yellow below fades and the olive buff edgings on the wings become grayish. In juvenal and first winter dress the remiges and rectrices are prominently edged with ochraceous tawny, which makes the species look very much like some of its allies. Spring specimens may even show traces of this rusty color. In juvenal dress, illustrated by specimens No. 9,250 and 37,672, Collection Carnegie Museum, the yellow below is very pale, the under tail-coverts buffy-tinged, and the back dull dusky olive, with the pileum darker, but less strongly contrasted than in the adult.

Measurements.—Male (twenty specimens): wing, 76–84 (average, 81); tail, 69–78 (75); bill, 16–18 (17); tarsus, 18–20 (19). Female (twenty specimens): wing, 71–80 (75.5); tail, 65–76 (69); bill, 16–18 (16.8); tarsus, 17–19.5 (17.5).

Range.—From Dutch and British Guiana and Venezuela to northern

Colombia (including the Magdalena Valley), and thence south (east of the Andes) to central Bolivia.

Remarks.—This form was described from Guarayos, eastern Bolivia, the type being still extant in the Paris Museum. It was long confused with the *M. nigriceps* of Sclater from western Ecuador, even after von Berlepsch in 1883 had suggested and Mr. Hellmayr in 1906 definitely determined the true application of the name from an examination of the type. This author was able to also compare at the same time the types of von Pelzeln's *M. tricolor* and *M. gracilirostris*, and came to the conclusion that all three belonged to the same form. In the case of the latter he is probably correct, on geographical grounds at least, but *M. tricolor* seems to be recognizably distinct, although conspecific, as already shown. We can find no difference between a series from Bolivia on the one hand and one from Venezuela on the other, and these in their turn are the same as a series from Colombia. A specimen from Trinidad belongs here also, but British and Dutch Guiana birds are intermediate between this form and *tricolor*, and might be referred as easily to the one form as to the other. In its vertical range it goes up to the upper limit of the Tropical Zone and sometimes a little beyond. It appears to be confined to the region just east of the Andes, except in Venezuela and Colombia, where it has succeeded in passing around their northern extremity and invading the low country beyond, grading into *nigriceps* in western Colombia. Dr. Chapman refers his specimens from below Andalucia, in the Eastern Andes of Colombia, to *nigriceps*, but we think that they, as well as the series from the Magdalena Valley in the collection of the Carnegie Museum, go better with *tuberculifer*. All these, being in fresh plumage, are a little darker than usual, but no more so than Bolivian skins.

In coloration *tuberculifer* is intermediate between *tricolor* on the one hand and *nigriceps* on the other, as might be expected from its geographical position. The cap is brownish or dusky black, not deep black as in *nigriceps*, but darker than in *tricolor*, and more strongly contrasted with the rest of the upper surface. The two small tubercles on the edge of the wing, from which the name *tuberculifer* is derived, are not peculiar alone to this species, however.

Specimens examined.—Trinidad: Princestown, 1. British Guiana: Carimang River, 1; Roraima (3500 ft.), 1. Dutch Guiana: Lelydorp, 1; vicinity of Paramaribo, 1. Venezuela: La Cumbre de Valencia, 3; Aroa, 1; Lagunita de Aroa, 2; Guarico, 1; Anzoategui, 4; El Trompillo, 1; Sierra de Carabobo, 9; Merida, 6; "Orinoco" (?), 1; Caicara, 3; Quiribana de Caicara, 1; San Antonio, Bermudez, 2; El Guacharo, 1; Escorial, 1; Cristobal Colon, Paria Peninsula, 1; Las Trincheras, 2. Colombia: Jordan, 1; Cacagualito, 1; Minca, 4; Bonda, 1; Cincinnati, 16; La Tigrera, 4; Las Vegas, 1; Don Diego, 13; Pueblo Viejo, 2; Fundacion, 2; Jaraquiel, 1; El Cauca, 5; La Palmita, 1; Ocaña, 3; El Tambor, 1; Rio Negro, 3; Palmar, 1; La Colorada, 1; "Santa Marta Mts.," 2; San Miguel, 1; Palomina, 2; San Francisco, 1; La Concepcion, 6; Andalucia, 3; Buena Vista, 2. Bolivia: Rio Yapacani, 2; Buenavista, 1; Rio Surutu, 6; Cerro del Chimbero, 1; Mission San Antonio, Rio Chimore, Prov. Cochabamba, 1; Roquefalda, Prov. Cochabamba, 1; Mouth of Rio San Antonio, Rio Espirito Santo, 1. Total, 137.

Myiarchus tuberculifer nigriceps Sclater.

Myiarchus nigriceps Sclater, Proc. Zool. Soc. London, 1860, 68 (Pallatanga, Ecuador; orig. descr.; type now in coll. Brit. Mus.), 295 (Esmeraldas, Ecuador).—Sclater, Cat. Am. Birds, 1862, 234 (Pallatanga and Esmeraldas, Ecuador).—Coues, Proc. Acad. Nat. Sci. Philadelphia, 1872, 75 (Quito, Ecuador; Sclater's references; descr.; crit.).—Sclater and Salvin, Nom. Avium Neotrop., 1873, 52, part (Ecuador and Colombia, in range).—Giebel, Thes. Orn., II, 1875, 661, part (ref. orig. descr.).—Salvin, Cat. Strickland Coll., 1882, 316 (Sclater's reference; crit.).—von Berlepsch, Ibis, 1883, 140, in text (range; crit.).—von Berlepsch and Taczanowski, Proc. Zool. Soc. London, 1883, 559 (Chimbo, Ecuador).—von Berlepsch, Journ. f. Orn., XXXII, 1884, 304, in text (range; crit.).—von Berlepsch and Taczanowski, Proc. Zool. Soc. London, 1884, 297 (Bugnac, Ecuador).—Sclater, Cat. Birds Brit. Mus., XIV, 1888, 258, part (localities in western Ecuador; descr.; references).—Salvin and Godman, Biol. Centr.-Am., Aves, II, 1889, 96, part (references; range).—Hartert, Nov. Zool., V, 1898, 488 (Chimbo and Paramba, Ecuador).—Salvadori and Festa, Bol. Mus. Zool. ed Anat. Comp. Torino, XIV, No. 362, 1899, 13 (La Concepcion and Niebli, Ecuador; references).—Goodfellow, Ibis, 1901, 707 (Intag and Gualea, Ecuador).—Sharpe, Hand-List Birds, III, 1901, 146, part (in list of species; range).—Dubois, Syn. Avium, I, 1902, 251, part (references; range).—Hellmayr, Nov. Zool., XIII, 1906, 26, part (localities in Ecuador), 324, part (crit.).—Ridgway, Bull. U. S. Nat. Mus., No. 50, IV, 1907, 613, 650, part (references; range).—von Berlepsch, Ornis, XIV, 1907, 477 (in list of species).—Menegaux, Mission Service Geog. Mes. Arc. Méridien Equat. Amér. du Sud, IX, i, 1911, B 58 (Gualea and Santo Domingo, Ecuador; references).—Hellmayr, Proc. Zool. Soc. London, 1911, 1137 (Pueblo Rico and Noanama, Colombia; crit.).—Brabourne and Chubb, Birds S. Am., I, 1912, 303 (ref. orig. descr.; range).

Pyrocephalus nigriceps Gray, Hand-List Birds, I, 1869, 363 (in list of species; range).

Myiarchus lawrencii var. *nigriceps* Ridgway, Am. Journ. Sci. and Arts, (3), IV, 1872, 455 (crit.).

Myiarchus tristis var. *nigriceps* Baird, Brewer, and Ridgway, Hist. N. Am. Birds, II, 1874, 333 (diag.; range; crit.).

Myiarchus tuberculifer nigriceps Hellmayr and von Seilern, Arch. f. Naturg., LXXVIII, 1912, 85, in text (range; crit.).—Chapman, Bull. Am. Mus. Nat. Hist., XXXVI, 1917, 477 (Alto Bonito, Dabeiba, Juntas de Tamaná, San José, Rio Frio, and Cali, Colombia; Ecuador; crit.).—Hellmayr, Arch. f. Naturg., LXXXV, 1920, 59, in text (range; meas.; crit.).

Subspecific characters.—Similar to *Myiarchus tuberculifer tuberculifer*, but upper parts brighter green (near olive citrine), pileum deeper black, sides of head darker, and under parts averaging brighter yellow.

Measurements.—Male: wing, 73–81 (average, 77.5); tail, 67–77 (72);

bill, 15.5–17.5 (17); tarsus, 18–19.5 (18.6). Female (eight specimens): wing, 69–79 (75); tail, 66–72 (70); bill, 16–17.5 (17); tarsus, 17–19 (18).

Range.—Pacific slope of western Colombia and western Ecuador.

Remarks.—The above diagnosis is based on specimens from Ecuador. Birds from western Colombia are not typical, varying as they do in the direction of *tuberculifer;* some of them, indeed, considered alone, could readily be referred to that form, but the series as a whole is nearer the Ecuador race. The evidence for the occurrence of *nigriceps* in Peru is not at all conclusive. No specimens have been examined by us from that country, and practically all the published records are for localities lying at elevations falling within the confines of the Subtropical Zone, as also indicated by the general character of their bird life. It is true that in Colombia and Ecuador *nigriceps* ascends to the upper limit of the Tropical Zone and even beyond, but it is certainly significant that there are no records for the low country in Peru. On geographical grounds alone, therefore, we feel justified in placing all the supposed Peruvian records for *nigriceps* under *atriceps,* and an examination of Taczanowski's description and general account (the measurements in particular) seems to confirm this view. Mr. Hellmayr, it is true, says that he can find no difference between a pair of birds from Cajabamba, Peru, and others from western Ecuador, except in size—which may be significant. Taking birds in fresh unworn plumage alone, and only those to the authenticity of whose sexing there is no doubt attaching, there is a gap in size between *nigriceps* and *atriceps* which is very apparent. The present form is clearly only subspecifically related to *tuberculifer,* the range of which it touches in northwestern Colombia, and with which it agrees well in size. It has escaped synonyms, since the *brunneiceps* of Lawrence, based on the bird of Panama, is recognizably distinct, having the pileum more brownish, less blackish, and the upper parts brighter.

Specimens examined.—Colombia: Murindo, 2; Cordoba, 4; Yumbo, 1; San José, 2; Cali, 1; Juntas de Tamana, 1; Rio Frio, 2; Dabeiba, 2; Alto Bonito, 2; San Luis, Bitaco Valley, 1; near Pavas, 1. Ecuador: "Quito," 2; Intag, 1; Esmeraldas, 2; Chone, Manavi, 1; Gualea, 1; Zamora, 1; Zaruma, 3; Huigra, Chimbo, 2; Pagma Forest, Chunchi, 1; Hacienda Jalancay, Chunchi, 1; Junction Chanchan and Chiguancay Rivers, 1; Bucay, 1. Total, 36.

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PROCEEDINGS

OF THE

BIOLOGICAL SOCIETY OF WASHINGTON

TWO NEW SOUTH AMERICAN SNAKES.

BY E. R. DUNN.

While going over some of the South American snakes in the Museum of Comparative Zoology, I happened upon two which seem as yet undescribed. As will be apparent their generic assignments are rather a problem, although their direct specific relations are easily determined.

Dromicus amazonicus, sp. n.

Type.—M. C. Z., No. 2820, Santarem, Brazil.

Scales 17; ventrals 152, anal divided; caudals 75. Eight upper labials, 4th and 5th entering eye; loreal longer than high; one pre- and two postoculars; temporals 1–2; internasals as long as broad, frontal longer than its distance from tip of snout, shorter than the parietals; latter longer than their distance from the internasals; anterior chin shields longer than posterior; olive brown above, white below and on the first two scale rows; dark spots on some of the scales of the 7th and 8th rows, forming two dorsal dark lines which disappear on the tail; upper labials and throat white with dark mottlings; a pair of white spots on the nape. Total length 250 mm., tail 55 mm.

Apparently allied to *Rhadinea binotata,* Werner, also from Brazil, but *binotata* has the posterior chin shields longer; a dark stripe between the two light flecks on the neck; and the sides, inclusive of the ends of the ventrals, are olive green.

Van Denburgh (1912 Proc. California Acad. Sci. (4) I p. 327) has pointed out the comparative uselessness of the scale pits for defining genera in this group of snakes. It then becomes exceedingly doubtful whether *Rhadinea, Aporophis, Leimadophis* (*Liophis*) and *Dromicus* (*Alsophis*), can be maintained as separate genera. There are doubtless several natural groups within this mass of some 110 snakes, but until better characters are found it is at least unsafe to describe a snake in one of these genera without carefully considering the species of the others. *Dromicus* is the oldest tenable name and is not preoccupied by *Dromica.*

As examples of the danger of trusting too readily to the generic divisions in this group it is worth while to mention—

(1) *Aporophis melanocephalus* Griffin (1917 Mem. Carnegie Mus. vii, 3, p. 171) which is clearly a synonym of *Rhadinea steinbachi* Boulenger (1905, Ann. Mag. Nat. Hist. (7) xv, p. 454), both snakes coming from Bolivia and both collected by the same man.

(2) *Liophis atahuallpae* Steindachner (1901 Anz. Ak. Wiss. Wien, p. 195) from Ecuador is, according to Boulenger in the Zool. Rec. for 1901, a synonym of *Rhadinea undulata* Wied (1825 Beitr. Nat. Bras. I, p. 329).

Tachymenis surinamensis, sp. n.

Type.—M. C. Z., No. 5123, Surinam.

Ventrals 196, anal divided; caudals 98; scales 19; total length 417 mm.; tail 113 mm.; eight upper labials, 4th and 5th entering eye; one pre- and and two postoculars; temporals 1–1; frontal very long and narrow, no broader than supraocular, longer than parietals, much longer than its distance from tip of snout; loreal longer than high. Color, (faded) very light above and below; a black dot on end of each ventral and one at tip of each scale in row one; second, third and fourth scale rows rather peppered with tiny black specks; a black dot on about every third scale in row four, larger black dots on about every third scale in row eight, on the neck these last fuse in pairs across median line and there is an elongate dark blotch on the middle five scale rows just back of the parietals; a light, dark bordered line along the frontal; a dark band from nostril through eye continuous with the slightly darker scale rows 2, 3 and 4; behind the eye on the labials this line bordered with black below; a dark spot below eye on fifth upper labial; lower labials and throat sprinkled with darker.

A second specimen with same data has ventrals 200, anal divided, caudals 89, total length 300 mm.; tail 75 mm. The upper series of dots on the back is on the seventh row; the marking on the frontal is not visible and the subocular streak extends from eye nearly to lip across fifth and sixth labial.

Related to *Tachymenis elongata* Despax from Peru. But *elongata* has scale pits; the parietal is as long as the frontal; the temporals are 1–2 and the coloration, while generally similar, differs in detail.

I am in some doubt as to whether the generic assignment of this snake is correct. It agrees with *Coniophanes* in the absence of scale pits and in the round pupil, but it is evidently closely allied to *Tachymenis elongata.* It is somewhat doubtful whether *Coniphanes* and *Tachymenis* can be kept apart. *Tachymenis* is the older name.

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NOTES ON SOME TROPICAL RANAE.

BY E. R. DUNN.

The notes hereinafter to be presented are supplementary to Boulenger's monograph of American Ranae (Proc. Amer. Acad. 55, 9, 1920).

Rana vibicaria (Cope).

I took five adults, fifteen young and a tadpole of this little known frog while in Costa Rica in 1920. All the specimens came from small ponds in an old crater of Poas. This is now occupied by the tumble-down "lecheria" miscalled the "Hotel de Poas," and is at an altitude of about 7000–7500 feet.

(*a*) Comparison with the type of *Levirana vibicaria* Cope (Proc. Ac. Phila. 1894, p. 141) makes it apparent that these are the same. It is also quite evident that Boulenger was right in considering *Levirana vibicaria* identical with *Rana godmani* Guenther (Biol. Cent. Amer. Rept. p. 204, pl. 63, f. A, 1900).

(*b*) Boulenger says "lower parts white." In life the under surface of the hind legs was red.

(*c*) The young differ markedly in color being bright green above; sides shiny black; a white line along upper jaw; under surfaces of legs and concealed parts of hind legs red.

The grass around the small ponds was alive with these very beautiful little frogs, evidently recently transformed. The adult were rather shy and remained in the pond.

(*d*) The color of the young is strikingly similar to that of *R. caeruleopunctata*. Direct comparison of my specimens with some of *caeruleopunctata* which I caught at Navarro, Costa Rica, shows that the two are more closely allied than would appear from the arrangement in Boulenger, 1920. There the two are each left rather isolated and each compared with Old World species. *R. vibicaria* is the more aquatic of the two and has much the more restricted range as it is known only from three places in the high volcanoes of Costa Rica, while *caeruleopunctata* ranges over Costa Rica and Nicaragua.

The dorso-lateral glandular fold which is very wide in adult *vibicaria* is narrow in *caeruleopunctata* and in young *vibicaria*.

The tips of the toes are evidently swollen into disks in *caeruleopunctata* and in young *vibicaria*.

I fail to see any difference between adults of the two species in degree of separation of the outer metatarsals and should say that they were separated nearly to the base in both.

I should then put *vibicaria* in group II of Boulenger (which includes all the other tropical American Ranae) and regard it as both anatomically and geographically allied to *R. caeruleopunctata*.

(*e*) The tadpole of this species has not been described.

The specimen at hand has the hind legs already apparent and measures 70 mm. The tail is about twice as long as the body, rounded at the tip; interocular space equals width of mouth; black; tail light brown with circular black dots; teeth 6–4; the upper series marginal; the lower bordered by a row of papillae; the uppermost row uninterrupted and the three lowest uninterrupted.

This tadpole agrees with that of *Rana palmipes* rather than with any other described American tadpole, but has more numerous series of horny teeth above. The tadpole of *caeruleopunctata* is as yet unknown.

(*f*) Deckert (Zoologica II, No. 1, 1915) mentions *Rana godmani* from Costa Rica. The locality (Guapiles, 1000 ft.) is far too low for this frog and the color "greenish olive above with indistinct darker spots, and whitish below" does not agree with that of *vibicaria* and sounds suspiciously like that of *palmipes*.

Rana palmipes.

Boulenger (1920, p. 479) in his discussion of Cope's *Ranula chrysoprasina* says that no specimens of *R. palmipes* have ever been received from Costa Rica. This is due, of course, to the fact that Underwood's collections mostly came from the high central part of the country. That *palmipes* occurs in Costa Rica is shown by six specimens in the M. C. Z., collected by me at Zent, at Monteverde and at Guapiles.

Rana pustulosa.

A single female specimen from Ventanas, Durango, was all that was known of this frog when Boulenger wrote in 1920. In 1921, I was presented with a male specimen from Mazatlan, Sinaloa by Señor Doctor Carlos Cuesta Torron. It is now in the M. C. Z.

It differs from the male of *palmipes* in having external vocal sacs; the tympanum is nearly the size of the eye and separated from it by ⅓ its own diameter; the tibiotarsal articulation reaches the eye; the heels do not overlap; there is a large horny pad on the inner side of the first finger.

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PROCEEDINGS

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THE IDENTITY OF ATTILA FLAMMULATUS LAFRESNAYE.

BY OUTRAM BANGS AND THOMAS E. PENARD.

Having examined the type of *Attila flammulatus* Lafresnaye in the Museum of Comparative Zoölogy, we establish its status as follows:

Attila flammulatus flammulatus Lafresnaye.

Attila flammulatus Lafresnaye, Rev. Zool., 1848, p. 47 ("Colombia"—we substitute Vera Cruz, Mexico; type, Lafr. coll. 4,526 [Verreaux Catalogue], now Mus. Comp. Zool., 76, 375).

Attila citreopyga salvini Ridgway, Proc. Biol. Soc. Wash. (Pasa Nueva, Vera Cruz, Mexico; type in coll. U. S. Nat. Mus.).

Measurements (in millimeters).—Type (M. C. Z., 76,375): wing, 94.0; tail, 79.0; tarsus, 28.5; exposed culmen, 26.5. Topotype of *A. c salvini* (M. C. Z., 102,465, ♂, Pasa Nueva, Vera Cruz, Mexico): wing, 94.0; tail, 77.0; tarsus, 28.5; exposed culmen, 26.0.

Range.—Vera Cruz and Pueblo, Mexico, south to Honduras.

Remarks.—The large size of Lafresnaye's specimen, the dark back, heavily streaked pileum, hindneck and sides, without any olivaceous shade, the orange-ochraceous rump and sides, the grayish throat and chest, very distinctly streaked—all agree with only the northern form named *salvini* by Ridgway and certainly not with *A. citreopygus* (Bonaparte), the recorded range of which has recently been extended to western Colombia by Chapman (Bull. Am. Mus. Nat. Hist., XXXVI, 1917, p. 495). Compared with topotypical specimens of *salvini*, the type of Lafresnaye's *Attila flammulatus* is found to be identical in all respects except that it has faded a little.

Sclater (Cat. Birds Brit. Mus., Vol. XIV, 1888, p. 358, footnote) states that *Attila flammulatus* Lafr. was unknown to him and hence he was unable to place it. Brabourne and Chubb (The Birds of So. Am., I, 1912, p. 319), however, include it in their list and give its range as "Colombia," no doubt on Lafresnaye's authority. But the locality Colombia is evidently an error as we have found to be the case with many other localities cited by Lafresnaye in his original descriptions.

Lafresnaye's designation of *Attila flammulatus* being the earliest for the species, the forms will stand as follows:

1. *Attila flammulatus flammulatus* Lafresnaye. Vera Cruz, Eastern Mexico.
2. *Attila flammulatus citreopygus* (Bonaparte). Nicaragua to western Columbia.
3. *Attila flammulatus cinnamomeus* Lawrence. Pacific slope of Mexico.
4. *Attila flammulatus mexicanus* Nelson. Tobasco, S. E. Mexico.
5. *Attila flammulatus luteolus* Ridgway. Pacific slope of Nicaragua and Costa Rica.
6. *Attila flammulatus gaumeri* Salvin and Godman. Yucatan to coast of Br. Honduras.
7. *Attila flammulatus cozumelae* Ridgway. Cozumel Island.

These forms are all recognized by Ridgway in his Birds of North and Middle America, but it is very probable that the number will be reduced when more material becomes available for study. For example, Carriker in his annotated list of the birds of Costa Rica and Cocos Island (Ann. Carnegie Mus., VI, 1910, p. 671) has already thrown out *Attila flammulatus luteolus*.

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PROCEEDINGS

OF THE

BIOLOGICAL SOCIETY OF WASHINGTON

GENERAL NOTES.

THE TYPE OF PACHYRAMPHUS POLYCHOPTERUS (VIEILLOT).

In our review of the races of *Pachyramphus polychopterus* (Bull. Mus. Comp. Zool., LXIV, 1921, 4, p. 382), we accepted Hellmayr's designation of South Brazil as the type locality of *Platyrhynchos polychopterus* Vieillot (Nouv. Dict., XXVII, 1818, p. 10), provisionally using the name *P. p. polychopterus* for the southern form. We stated, also, that Hellmayr and Seilern (Archiv Naturg., 1912, Abt. A, Heft 5, p. 89, footnote) had noted that the type might upon investigation prove to belong to another form. Since the publication of our article Dr. Hellmayr has informed us that he has examined the type in the Paris Museum, and that it is identical with Bahia specimens. The type, an adult male, affords the following measurements: wing, 75 mm.; tail, 56 mm. The name *Pachyramphus polychopterus polychopterus* (Vieillot) should therefore be transferred to the eastern form, replacing *Pachyramphus polychopterus splendens* (Wied) which we had revived in recognizing this race; and the name *Pachyramphus polychopterus notius* Brewster and Bangs again becomes available for the large southern form.

The recognizable forms are thus:

1. *Pachyramphus polychopterus polychopterus* (Vieillot).
2. *Pachyramphus polychopterus notius* Brewster and Bangs.
3. *Pachyramphus polychopterus variegatus* (Spix).
4. *Pachyramphus polychopterus tristis* (Kaup).
5. *Pachyramphus polychopterus cinereiventris* Sclater.
6. *Pachyramphus polychopterus tantulus* Bangs and Penard.
7. *Pachyramphus polychopterus similis* Cherrie.
8. *Pachyramphus polychopterus dorsalis* Sclater.

—*Outram Bangs and Thomas E. Penard.*

A NEW NAME FOR THE RUFOUS-CHESTED FLYCATCHER.

The bird described by Lafresnaye (Rev. Zool., 1846, p. 207) as *Tyrannula rufipectus* proves to be a *Leptopogon* and is identical with *Leptopogon erythrops* Sclater (Proc. Zool. Soc. London, 1862, p. 111). This invalidates the combination *Leptopogon rufipectus* Taczanowski (Orn. Pérou, II, 1884, p. 249) for which we now propose the name **Leptopogon inca,** nom. nov.

—*Outram Bangs and Thomas E. Penard.*

THE IDENTITY OF HYLOPHILUS LEUCOPHRYS LAFRESNAYE.

The type of *Hylophilus leucophrys* Lafresnaye (Rev. Zool., 1844, p. 81—Colombia) which is now in the collection of the Museum of Comparative Zoölogy, proves to be identical with *Vireosylva josephae* (Sclater) (Proc. Zool. Soc. London, 1859, p. 137, pl. 154—Phallatanga, Ecuador).

Compared with a series of the various races of this species, we find the type to agree best with birds from Colombia. The specimen is faded and has become brownish above as in old Bogotá skins, and the yellow of the under parts is now duller. Sclater (Cat. Birds Brit. Mus., XI, 1886, p. 246) places *Hylophilus leucophrys* Lafr. in the synonymy of *Chlorospingus superciliaris* Lafr. [=*Hemispingus superciliaris* (Lafr.)], but Berlepsch omits the name altogether in his "Revision der Tanagriden," correctly assuming that it did not belong to a tanager. Chapman (Bull. Am. Mus. Nat. Hist., XXXVI, 1917, p. 540) says that the Colombian birds are larger than those from Ecuador. They may be separable, in which case the name *Vireosylva josephae* (Sclater) will be available for the Ecuadorean form.

At present we recognize four forms as follows:

1. *Vireosylva leucophrys leucophrys* (Lafresnaye).
2. *Vireosylva leucophrys mirandae* (Hartert).
3. *Vireosylva leucophrys chiriquensis* Bangs.
4. *Vireosylva leucophrys costaricensis* Ridgway.

—*Outram Bangs and Thomas E. Penard.*

NOTE ON LAMPROPELTIS MEXICANA (GARMAN).

While tabulating characters of snake genera I noticed that *Oreophis* Dugès differed only slightly from *Lampropeltis*. On looking the matter up, it became apparent that *Oreophis boulengeri* Dugès (1897, Proc. Zool. Soc. London, p. 284) from Guanajuato, Mexico, is a strict synonym of *Ophibolus triangulus mexicanus* Garman (1883, Mem. Mus. Comp. Zool., (7), 3, p. 66) from San Luis Potosi, Mexico. This gives a third specimen and second locality for this rare snake and affords an opportunity to erase a genus and a species from an overcrowded list.

The dentition ascribed to *Oreophis* is obviously abnormal, differing from that of *Lampropeltis* in having four teeth in the middle of the maxillary shorter than the rest. In all the other characters, especially in the peculiar head coloration, the description agrees well with the types of Garman's species which I have just examined.

The scale formula for this third specimen is Sc. 22; V, 185 + 1; C. 44; L. 8–9; T. 2–3; 40 red saddles on body and tail. Total length 387 mm., tail 60 mm.

—*E. R. Dunn.*

A NOTE ON THE DOMESTIC PIGEON.

On September 13, 1921, in company with Mr. C. H. M. Barrett, I was engaged in the wild rice (*Zizania*) marshes of the Anacostia River, D. C., which is one of the areas in the Federal District where shooting is permitted. A pair of homing pigeons (*Columba livia* var.) had been casually noted for several minutes, but our attention was centered in their direction, when a hunter, seventy-five or a hundred yards distant, fired at them. Although it was obvious that the birds were practically out of range, one of them seemed to have been hit, for after a short circle, it came down and alighted on the surface of the river within about sixty yards of our boat. The second bird, circling sharply, hovered over its mate for a few seconds and then came down and lit on the water beside it. Turning our glasses on the birds, we now observed them to be drinking. both apparently uninjured. They remained on the water fully thirty seconds and then rose as lightly and apparently with as little effort as would be expected from a gull or tern. Both birds were seen several times later in the same day, but were not again observed to repeat their aquatic performance.

Although this habit (if habit it is) was entirely new to me, I find that it has been noted by other observers although it is evidently of rare occurrence. In the Canadian Field-Naturalist for May, 1921 (Vol. XXXV, No. 5, p. 98), Mr. Hoyes Lloyd reports a similar observation, with a resumé of some previous accounts. He reports that this aquatic habit has been noted in the case of the domestic or homing pigeon (European Rock Dove stock), the Wood Pigeon (*Columba palumbus*, and the Passenger Pigeon (*Ectopistes migratorius*). In this connection, it is interesting to recall that in the system of classification proposed by Dr. Hans Gadow,[1] Order number eleven of the Division of Neornithes Carinatae, the Charadriiformes, include the A. O. U. Orders Limicolae, Longipennes, and Columbae and the Family Alcidae.

—*Frederick C. Lincoln.*

[1]Bronn's Klassen un Ordnungen des Thier-Reichs. Vögel. Von Hans Gadow. II, Systematischer Theil, Leipzig, 1893, pp. 194–212.

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PROCEEDINGS

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A NEW SNAKE FROM SOUTHWEST AFRICA.

BY THOMAS BARBOUR.

Not long ago Professor Charles Palache brought to the Museum of Comparative Zoology a small but very interesting collection of reptiles. They came from Kolmanskop about seventy miles south of Lüderitzbucht and from the waterless region of the diamond fields. This desert, called the Nameb, is an arid coastal zone like the Tarapacá or Atacamá deserts and likewise owes its extreme aridity to a cold water current similar to the Humboldt stream off the Chilean coast. Oftimes years pass with no rainfall at all but the average, over a period of years, is about 0.5 inches a year. The Nameb is essentially lifeless except that after one of the rare rainfalls reptiles appear for a short time and then retire again for another long period of inactivity.

Apparently this region was little visited by German zoologists although, on account of the diamond fields, there was some rather extensive geological exploration.

This collection was made by Dr. Werner Beetz, who not only nursed Prof. Palache through a dangerous attack of typhoid fever but presented him with these specimens as well.

This novelty with which, therefore, it is a pleasure to associate Dr. Beetz's name, was found among such rare and little known forms as *Sepsina weberi* Roux, *Condylosaurus subtessellatus* (Smith) and *Ramphiophis multimaculatus* (Smith) and others.

The genus *Tarbophis* in which I have included this species is not particularly well defined and may possibly finally be merged with *Crotaphopeltis* from which it is separated by relatively minor dental character and by style of coloration. No species of the genus has been recorded from the Southwest Protectorate (formerly German Southwest Africa) but the species most

closely similar is likewise the nearest geographically, *Tarbophis semiannulatus* (Smith), being apparently closely allied and found in East, South Central and Southeast Africa. The new form is to be called

Tarbophis beetzii, sp. nov.

Type M. C. Z., No. 16,728 from Kolmanskop, Southwest Protectorate, Africa. Collected by Dr. Werner Beetz. Type fresh and in fine preservation. Diagnosis: Similar to *T. semiannulatus* but differing in having 21 rows of scales instead of invariably having 19; in coloration, in having the anal entire and in several other minor features.

Description: Rostral perpendicular in profile; not visible from above and much wider than high; internasal broader than long, much shorter than the prefrontals; frontal very slightly longer than broad, a little longer than its distance from tip of snout; much shorter than the parietals; nasal divided; loreal almost square; one preocular widely occluded from the frontal, two post-oculars; temporals 2+3; nine upper labials, of which the third, fourth and fifth enter the eye; four lower labials touch the anterior chin shields which are very large; posterior chin shields small and widely separated; scales in 21 rows; ventrals, 218; anal entire; subcaudals 46 pairs.

Color, sandy buff above and below; the dorsal surface of the nape with a conspicuous crosswise marking, wider on the midline than laterally, also thirty-seven round, dark, middorsal spots on the body and many small flecks on the upper side of the tail. The sides of the body are very faintly clouded with dusky, the belly is immaculate.

Length of body, 220 mm.; of tail, 31 mm.

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